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Environmental Assessment
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Project Title: Sundry Notice Flaring Requests

Location: North Dakota Field Office
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Dickinson, ND 58601-2619

BLM

1.0 PURPOSE AND NEED

1.1 Introduction

This Environmental Assessment (EA) has been modified based on the decision of a State Director Review. The EA now better describes the proposed action and decision to be made by the BLM, and clarifies that royalty determination will be made on a case-by-case basis as a separate decision on each Sundry Notice (SN) request to flare oil-well gas. Modifications are made throughout the document as a result of the changes to the purpose and need/proposed action.

This modified EA has been prepared to disclose and analyze the environmental consequences of SN requests pending review to flare oil-well gas from BLM administered oil wells in western North Dakota. Reasonably foreseeable requests to flare oil-well gas for BLM administered oil wells in the same geographic areas will also be analyzed in the EA. Royalty determination will not be part of this EA, and will be completed for each SN request in accordance with NTL-4A as a separate review.

The BLM anticipates additional flaring requests in the future as a result of development. This broader suite of anticipated flaring requests would be temporally and spatially related to the past and ongoing flaring activities, and would require a series of associated subsequent decisions. Additional coordination would be conducted with the proper surface management agency (SMA) for SNs requiring mitigation at the time of submission of an Application for Permit to Drill (APD).

This EA does not apply to private and state wells approved and administered by the State of North Dakota that have been committed to Federal units or communitization agreements in accordance with Instruction memorandum No MT-95-025. The BLM has authority to make avoidable or unavoidable loss determinations for private and state wells committed to Federal units or CAs. As stated above, royalty determination will not be part of this EA, and will be completed for each SN request in accordance with NTL-4A as a separate review.

Oil production on Federal and Indian mineral estates has dramatically expanded in western North Dakota in the past several years with horizontal drilling and hydraulic fracturing of the Bakken and Three Forks Formations. The "Bakken" play primarily produces oil and associated natural gas. During oil and gas production, it may be necessary to combust or release natural gas for a number of operational reasons. The combustion of natural gas is known as flaring, while releasing natural gas directly into the atmosphere is venting. Each has different environmental impacts.

In addition to the operational reasons for flaring and venting, in areas where the primary purpose of drilling is to produce oil, producers flare or vent associated natural gas because no local market exists for the gas and transporting it to a market may not be economically feasible. Natural gas prices are a major determinant of whether associated gas is flared, vented or sold.

Associated natural gas would be sold if prices were high enough over a long enough period to justify building the infrastructure to transport the gas to a market.

Under the general requirements for onshore oil and gas operations (43 CFR 3162.1), an operator shall comply with applicable laws and regulations. These include, but are not limited to, conducting all operations in a manner that results in maximum ultimate economic recovery of oil and gas with minimum waste.

Notice to Lessees & Operators of Onshore Federal & Indian Oil and Gas Leases (NTL-4A) Royalty or Compensation for Oil and Gas Lost, Instruction Memorandum No. WO 87-652, and Instruction Memorandum WO No. 92-91 provide the BLM authority and guidance to allow venting or flaring of oil-well gas under certain conditions. Specifically in NTL-4A, an operator must request approval to vent or flare produced oil well gas by submitting:

1) *an evaluation report supported by engineering, geologic, and economic data which demonstrates to the satisfaction of the Supervisor that the expenditures necessary to market or beneficially use such gas are not economically justified and that conservation of the gas, if required, would lead to the premature abandonment of recoverable oil reserves and ultimately to a greater loss of equivalent energy than would be recovered if the venting or flaring were permitted to continue, or*
2) *an action plan that will eliminate flaring of gas within 1 year from the date of application.*

The Operator submits a Form 3160-5, Sundry Notices and Reports on Wells that details the notice of intent to flare gas. The BLM is currently developing a national rule that will update and replace NTL-4A. The new rule will focus on waste prevention and royalty collection, authorities inherent to the BLM.

Most flaring in western North Dakota occurs either because the well is connected to infrastructure with inadequate capacity or the well is not connected to the gathering system. Various factors such as surface ownership and permitting review time make pipeline permitting challenging.

The BLM North Dakota Field Office (NDFO) is highly engaged in facilitating pipeline infrastructure, some of which would help to address flaring of oil-well gas. From 2012 – 2015, the NDFO has seen an increase in the number of SN applications requesting to flare from both Federal and Indian wells throughout western North Dakota. The requests to flare vary and require review to ensure compliance with NTL-4A. The need for an environmental assessment of flaring impacts, limited staff, and an increased number of Applications for Permit to Drill (APDs) have resulted in the accumulation of approximately 1,770 [1] Federal and Indian flaring SN applications requesting flaring approval for Federal and Indian oil wells throughout western North Dakota.

[1] See Appendix E, Comment # 14, for explanation of changes to the number of Sundry Notices being analyzed in this EA.

On June 1, 2014, the North Dakota Industrial Commission (NDIC) adopted a new policy, with a published revision on September 24, 2015, Order 24665, for the reduction of gas flaring. This requirement is for all wells which will be drilled in the Bakken, Three Forks, and Three Forks/Bakken or Sanish Pools. The policy requires that a Gas Capture Plan (GCP) accompany all APDs submitted to NDIC. Gas Capture Plans aim to ensure that all options for capturing gas are fully evaluated prior to drilling. Another component of the new policy is the implementation of flaring reduction targets in accordance with a prescribed timeline. Failure to meet the targets results in the restriction of oil production until the target is met.

In addition to the new NDIC policy, a "Flaring Task Force" was formed under the North Dakota Petroleum Council (NDPC) composed of industry representatives, State of North Dakota representatives and others, intending to pool knowledge and experience to better optimize the resource at the wellhead and improve existing infrastructure to capture and transport gas for processing. The group focused on educating the public while working with stakeholder groups, governments, the Three Affiliated Tribes (Fort Berthold Reservation), researchers, and landowners.

1.2 Purpose and Need for the Proposed Action

The need for the action is established by the BLM's responsibility under the National Environmental Policy Act (NEPA) and NTL-4A to evaluate Federal and Indian SN requests to flare oil-well gas. The BLM has approximately 1,770[1] SNs pending review representing past and present flaring. This review allows BLM to determine the social and environmental impacts from flaring and identify any needed for mitigation measures, allow private individuals or companies to continue developing oil and gas resources in accordance with Federal regulations, and at the same time meet the requirements identified in the Energy Policy Act, Sec. 362(2), Federal Oil and Gas Leasing Reform Act of 1987, and the Mineral Leasing Act of 1920, Sec. 17. Companies with pending flaring sundry notices have received approved APDs from the BLM.

1.3 The Decision to be Made

The BLM will determine the environmental and social impacts from flaring (past, present and reasonably foreseeable) and identify any design features/mitigation measures that may need to be applied to future flaring from new facilities only, as well as Conditions of Approval. The BLM has the authority to protect the viewsheds of cultural and historic properties for federally administered wells on both federal and non-federal surface under the National Historic Preservation Act (NHPA), and 36 CFR 800 – Protection of Historic Properties. In addition, mitigation requirements for venting and flaring within the viewsheds of historic or cultural properties are authorized under the NEPA, section 6.8.4.

The BLM is evaluating and analyzing current and future flaring as well as disclosing the cumulative impact of flaring oil-well gas. These activities are an integral part of BLM's oil and gas program under authority of Federal Land Policy and Management Act (FLPMA) of 1976.

1.4 Conformance with Land Use Plan(s)

This EA is tiered to the information and analysis and conforms to the decisions contained in the North Dakota RMP Desktop Document, April 1988, Chapter 4 page 11, and its' associated Environmental Impact Statement (EIS), the governing land use plan for the NDFO.

Analysis of the impacts from flaring is documented in this EA, and was conducted by BLM staff in the Eastern Montana/Dakotas District, North Dakota Field Office, and Montana State Office who relied on professional knowledge of the areas involved, review of current databases, file information, and operator input to ensure that appropriate considerations were made.

Analyzing the impacts from flaring and determining potential mitigation measures for flaring from new facilities would not be in conflict with any local, county, or state laws or plans.

1.5 Public Scoping and Identification of Issues

Public scoping for this project was conducted by posting the proposed action on the NDFO website - NEPA notification log. Therefore, scoping was initiated August 30, 2013, the date the EA was assigned a number and posted to the NEPA notification log. Refer to Chapter 5 of this EA for a more complete summary of comments received and consultation/coordination.

Site-specific resource concerns were identified by the BLM through the preliminary review process conducted during the internal scoping period. The BLM focuses its analysis on "issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). Issues have a relationship with the proposed action; are within the scope of analysis; and are amenable to scientific analysis.

The interdisciplinary team reviewed the proposed action and determined two issues that would have an effect on particular resources. The resources carried forward through analysis in this EA are air resources, greenhouse gas emission and climate change, visual setting of cultural or historical properties, Native American Religious Concerns, and socioeconomic

- Issue – Flaring emissions

  The BLM recognizes air as a valuable natural and public resource that needs to be protected through prudent management and appropriate mitigation. Where a BLM-authorized activity has the potential to affect the air resource, this activity must be managed appropriately, consistent with BLM planning objectives and in compliance with the Clean Air Act.

  According to EPA Emission Inventory Improvement documents (EPA 1999), oil field emissions encompass three primary areas: combustion, fugitive, and vented. Flaring falls under the combustion area and those emissions include SO_2, ozone precursors called volatile organic compounds (VOCs), greenhouse gases (GHGs), and hazardous air pollutants (HAPs).

- Issue – Effects on the visual setting of historical properties

  Flaring has the potential to alter the characteristics of a significant cultural or historic property by introducing visual, atmospheric or audible elements that diminish the integrity of the property's setting or feel. The BLM has the authority and responsibility to protect the viewsheds of cultural and historic properties for federally administered wells on both federal and non-federal surface under the NHPA and 36 CFR 800 – Protection of Historic Properties. In addition, mitigation requirements for venting and flaring within the viewsheds of historic or cultural properties are authorized under the NEPA, section 6.8.4

  Though the effect on all historic properties were considered, for this analysis an Interdisciplinary Team developed a viewshed of the Killdeer Mountain Battlefield State Historic Site, Elkhorn Ranch within Theodore Roosevelt National Park, the Lynch Knife River Flint Quarry, the Chateau de Mores State Historical Site, the Fort Buford State Historic Site, the Fort Union Trading Post National Historic Site, the Fort Dilts State Historic Site, and the Lewis & Clark National Historic Trail to understand the potential effects from flaring.

1.6 Issues Not Analyzed

The BLM considered the following issues but did not analyze those in further detail because they were determined to not be present or not potentially impacted by this project:

- Areas of Critical Environmental Concern (ACEC),
- Farmlands (Prime & Unique),
- Floodplains, Invasive,
- Non-native weed species,
- Threatened, Endangered, or Candidate Plant Species, Threatened, Endangered, or Candidate Animal Species,
- Wastes (Hazardous or Solid),
- Water Quality (Drinking/Ground),
- Wild and Scenic Rivers,
- Livestock Grazing,
- Woodland/Forestry,
- Vegetation including Special Status Plant Species,
- Fish and Wildlife including Special Status Species,
- Soils,
- Recreation,
- Geology,
- Paleontology,
- Lands/Access,
- Fuels/Fire Management,
- Wilderness Characteristics.

This EA does not contain discussion of flaring approvals or avoidable/unavoidable loss determinations.

2.0 DESCRIPTION OF ALTERNATIVES

2.1 Alternative A (No Action):

The No Action Alternative would be to analyze 1,770[1] pending SN requests to flare oil-well gas from Federal and Indian oil wells on an individual basis in accordance with NEPA. The No Action Alternative means the analysis would be conducted on a case-by-case basis with limited consideration of the larger environmental context and requires significant review time. Impacts and mitigation measures would be limited to the small geographic area of the individual request. Surface management would remain the same and ongoing oil and gas production would continue on surrounding Federal, Indian, private, and State leases. Future flaring SN requests would also be analyzed on a case-by-case basis.

2.2 Alternative B (Proposed Action-BLM Preferred):

The Proposed Action would be for BLM to analyze 1,770[1] pending SN requests (Appendix A) to flare oil-well gas from Federal and Indian oil wells along with disclosing the reasonably foreseeable impacts from flaring in the western portion of North Dakota, and identify mitigation measures for flaring from future production facilities (Map 1).

Below is a list of potential mitigation measures that the BLM could apply, as appropriate, to future flaring requests on new facilities. For past flaring refer to Chapter 4 for the disclosure of the impacts to cultural resources.

- Construct a gathering pipeline which will ultimately be connected to a trunk pipeline;
- Liquefy the gas on location and store on location until it can be transported via truck to a pipeline injection location;
- Reinject the natural gas into a formation for possible future use;
- Reinject the natural gas into the reservoir for secondary enhanced oil recovery;
- Beneficial use on lease;
- Camouflaging of flare using vegetation or architectural structures;
- Reducing flare stack height;
- Restriction of active flaring at night
- Coordination with the appropriate SMA would be required for future flaring requests within the viewshed of a cultural or historic property.

2.3 Alternatives Considered But Dismissed from Further Analysis

Approving all SN requests to flare oil-well gas from Federal and Indian wells as submitted by the operator without individual analysis would not be in accordance with BLM policy and regulations. This alternative would not allow BLM to properly evaluate each request to flare in accordance to NEPA, and apply necessary mitigation measures to flaring from newly constructed facilities when necessary.

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter describes the existing environment (i.e., the physical, biological, social, and economic values and resources) within the Williston Basin in western North Dakota (Map 1). For this environmental analysis, the Williston Basin in western North Dakota is considered the area of analysis that could be affected by implementation of the alternatives described in Chapter 2. Each resource description will be analyzed further in Chapter 4.

Only those aspects of the existing environment that are potentially impacted by this project are described in detail. The aspects of the existing environment that were determined to not be present or not potentially impacted by this project are listed in Section 1.6 above.

3.2 General Description of the Affected Environment

The western portion of North Dakota is comprised of gently rolling hills, buttes, badlands, wetlands, riparian areas, and river breaks. These lands are primarily privately owned and are mainly used for agriculture. These lands have limitations from crop production and are generally rangelands or pasture lands.

The BLM manages approximately 57,400 surface acres of public land in North Dakota and has oil and gas management responsibilities for 1,082,000 acres of Federal subsurface and approximately 546,000 acres of Indian Trust and Allotted subsurface, mostly on the Fort Berthold reservation. Federal and Indian minerals represent approximately 7 percent of total Bakken/Three Forks mineral estate. The BLM and BIA split management responsibility on Indian lands. The BIA manages leasing and surface use, and the BLM manages oversight of oil and gas drilling and production activities. Similarly, the BLM and USDA Forest Service split management responsibilities on Forest Service lands, approximately 1,025,000 acres. The Forest Service manages leasing and surface use, and the BLM managing oversight of oil and gas drilling and production activities.

3.3 Air Resources

Air resources include air quality, air quality related values (AQRVs), and greenhouse gas (GHG) emissions affecting climate change.

The U.S. Environmental Protection Agency (USEPA) has the primary responsibility for setting minimum air quality standards, including seven criteria air pollutants subject to National Ambient Air Quality Standards (NAAQS). Pollutants regulated under NAAQS include carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone, particulate matter with a diameter less than or equal to 10 microns (PM_{10}), particulate matter with a diameter less than or equal to 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2). Two additional pollutants, nitrogen oxides (NO_x) and volatile organic compounds (VOCs), are regulated because they form ozone in the atmosphere. Air quality is determined by pollutant emissions and emission characteristics, atmospheric chemistry, dispersion meteorology, and terrain. AQRVs include effects on soil and water, such as sulfur and nitrogen deposition, lake acidification, and aesthetic effects, such as visibility.

In addition to USEPA federal regulations, air quality is also regulated by the North Dakota Department of Health, Division of Air Quality. This agency develops state-specific regulations and issues air quality permits to emission sources.

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Climate change includes both historic and predicted climate shifts that are beyond normal weather variations.

3.3.1 Air Quality

Air quality is monitored at State and Local Air Monitoring Systems (SLAMS) monitors within the following counties with oil and gas activity: Billings, Burke, Dunn, and McKenzie. The USEPA air quality index (AQI) is an index used for reporting daily air quality to the public. The index tells how clean or polluted an area's air is and whether associated health effects might be a concern. The USEPA calculates the AQI for five criteria air pollutants regulated by the Clean Air Act (CAA): ground-level ozone, PM, CO, SO_2, and NO_2. For each of these pollutants, USEPA has established NAAQS to protect public health. An AQI value of 100 generally corresponds to the primary ambient standard for the pollutant. The following terms help interpret the AQI information:

- **Good** – The AQI value is between 0 and 50. Air quality is considered satisfactory and air pollution poses little or no risk.
- **Moderate** – The AQI is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- **Unhealthy for Sensitive Groups** – When AQI values are between 101 and 150, members of "sensitive groups" may experience health effects. These groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
- **Unhealthy** – The AQI is between 151 and 200. Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects.
- **Very Unhealthy** – The AQI is between 201 and 300. This index level would trigger a health alert signifying that everyone may experience more serious health effects.

AQI data show that there is little risk to the general public from air quality in the analysis area (Table 3.3.1). Based on available aggregate data for state-operated monitors in Billings, Burke, Dunn, and McKenzie counties for years 2011–2013, at least 92 percent of the days were rated "good." The three-year median daily AQIs were 33, 34, 31, and 35 for the Billings, Burke, Dunn, and McKenzie county monitors. Table 3.3.1 does not include data from monitors located at industrial sites.

Table 3.3.1 USEPA Air Quality Index Reports

County[1]	# Days in Period	# Days Rated Good or No Data	Percent of Days Rated Good or No Data	# Days Rated Moderate	# Days Rated Unhealthy for Sensitive Groups	# Days Rated Unhealthy	# Days Rated Very Unhealthy
Billings	1,096	1,091	99%	5	0	0	0
Burke	1,094	1,006	92%	88	0	0	0
Dunn	1,023	968	95%	55	0	0	0
McKenzie	1,096	1,005	92%	90	0	0	1

Source: USEPA 2014. AirData website (http://www.epa.gov/airdata/ad_rep_aqi.html, accessed August 19, 2014).
[1] Monitor names and station identifiers are as follows:
The Billings County monitor is the Painted Canyon monitor at the Theodore Roosevelt National Park North Unit (38-007-002).
The Burke County monitor is located in the Lostwood Wilderness (38-013-004).
The Dunn County monitor is located in Dunn Center (38-025-003).
The McKenzie County monitor is located at the Theodore Roosevelt National Park North Unit (38-053-002).

The area managed by the NDFO is designated as an attainment area for all NAAQS. Maximum concentrations as a percentage of the NAAQS are summarized in Table 3.3.2 based on 2013 monitoring data. Gaseous pollutant concentrations are provided in terms of parts per million (ppm) or parts per billion (ppb), while particulate concentrations are provided in terms of micrograms per cubic meter ($\mu g/m^3$). Data are not provided for CO and lead, which are not monitored at these sites. Data from multiple SLAMS monitoring locations are provided, including monitors in the Lostwood Wilderness (Burke County) and Theodore Roosevelt National Park North Unit (McKenzie County). A non-SLAMS monitoring site is maintained by the National Park Service at the Theodore Roosevelt National Park South Unit in Billings County.

Figure 3.3.1 provides air quality trend data based on monitoring data provided by the North Dakota Department of Health for years 2006-2013. Although oil and gas activity has increased substantially during the last several years, ambient concentrations have remained relatively stable or have decreased slightly, with the exception of PM_{10}, which increased substantially in Dunn County from 2010 to 2011 and has remained at the higher level. Additional air quality regulations that reduce emissions from many types of sources and operator efforts to control emissions have maintained good air quality in the area.

In addition, a new policy adopted in June 2014, and revised on September 24, 2015 by the North Dakota Industrial Commission (NDIC) will further limit VOC, GHG, and NO_x emissions from flaring of gas associated with oil wells. NDIC Order 24665 requires operators to capture greater percentages of gas at North Dakota Bakken Formation wells in order to meet gas capture targets of 77% by January 1, 2015, 80% by April 1, 2016, 85% by November 1, 2016, 88% by November 1, 2018, and 91% by November 1, 2020. Gas capture targets may be met by routing gas to pipeline for sale, usage of gas at the well site, or through the beneficial use of gas (e.g. electrical power generation).

Table 3.3.2 2013 Monitored Concentrations Representative of the Study Area

Pollutant	Averaging Time	Applicable Standard (Format)	Ambient Concentrations[a] (Billings, Burke, Dunn, McKenzie, Williston[b] Counties)	Percentages of NAAQS (Billings, Burke, Dunn, McKenzie, Williston[b] Counties)
CO	1 hour	35 ppm (2^{nd} highest)	NA, NA, NA, NA, NA	NA, NA, NA, NA, NA
	8 hour	9 ppm (2^{nd} highest)	NA, NA, NA, NA, NA	NA, NA, NA, NA, NA
Lead	24 hour	150 (3-month avg.)	NA, NA, NA, NA, NA	NA, NA, NA, NA, NA
NO_2	1 hour	100 ppb (98^{th} percentile)	NA, 17, 10, 10	NA, 17%, 10%, 10%
O_3	8 hour	0.070 ppm, (4^{th} highest daily maximum)	0.059, 0.058, 0.056, 0.058. 0.059	79%, 77%, 75%, 77%, 79%
PM_{10}	24 hour	150 $\mu g/m^3$ (2^{nd} highest)	NA, 37.0, 74.0, 19.0, 76.0	NA, 25%, 49%, 13%, 51%
$PM_{2.5}$	24 hour	35 $\mu g/m^3$ (98^{th} percentile)	11, 15, 15, 11, 22	31%, 43%, 43%, 31%, 63%
	Annual	12 $\mu g/m^3$ (weighted mean)	4.4, 6.8, 5.5, 6.5, 9.6	37%, 57%, 46%, 54%, 80%
SO_2	1 hour	75 ppb (99^{th} percentile)	NA, 28, 9, 9, NA	NA, 37%, 12%, 12%, NA

Source: NDDOH 2014.

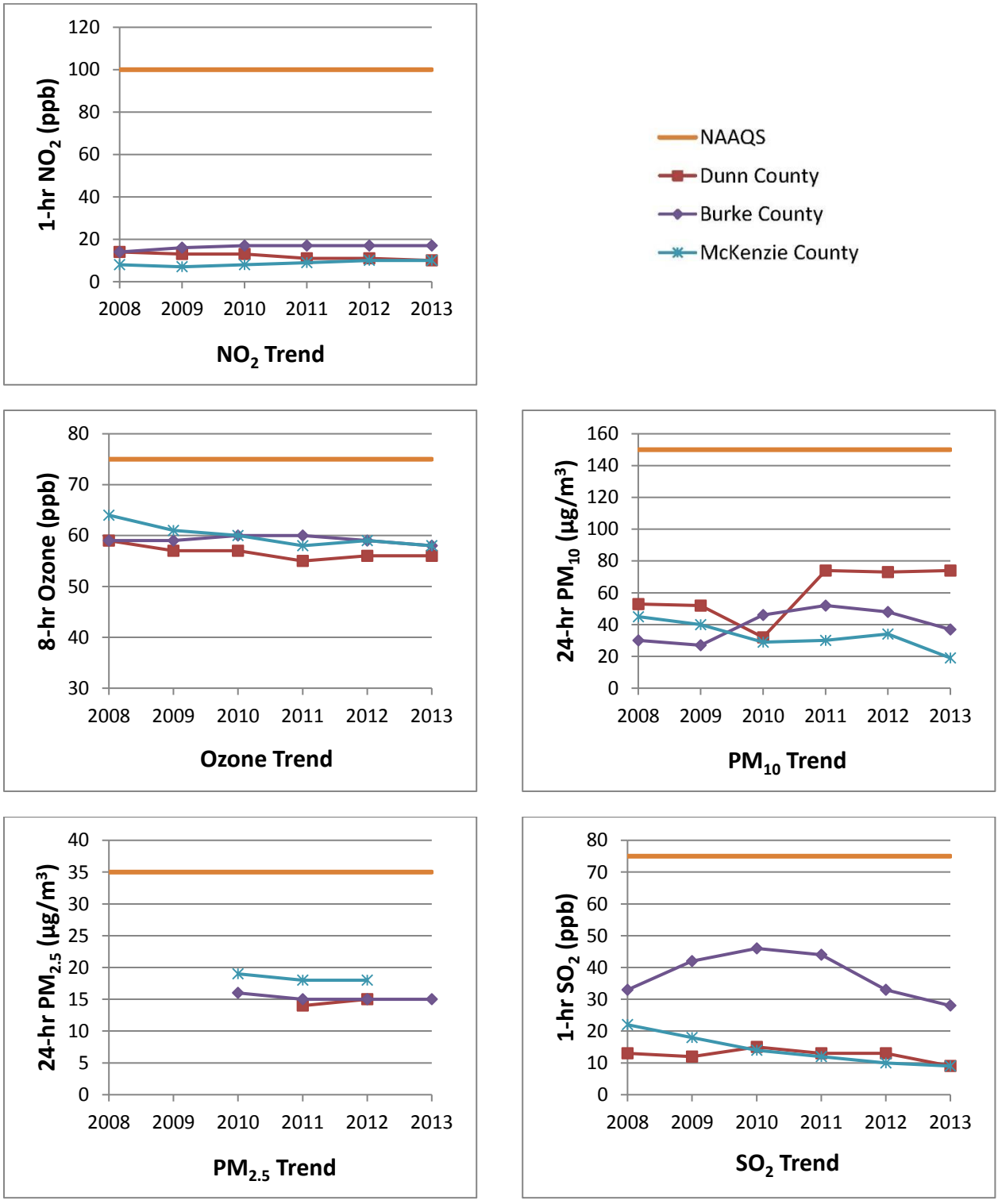
NA = not available.

[a] These values represent a 3-year average or a single year depending on the format of the NAAQS. Three-year averages of annual values are needed to determine NAAQS compliance for the NO_2, O_3, PM_{10}, 24-hour $PM_{2.5}$, and SO_2 standards.

[b] The monitor in Williston County began operating in 2013.

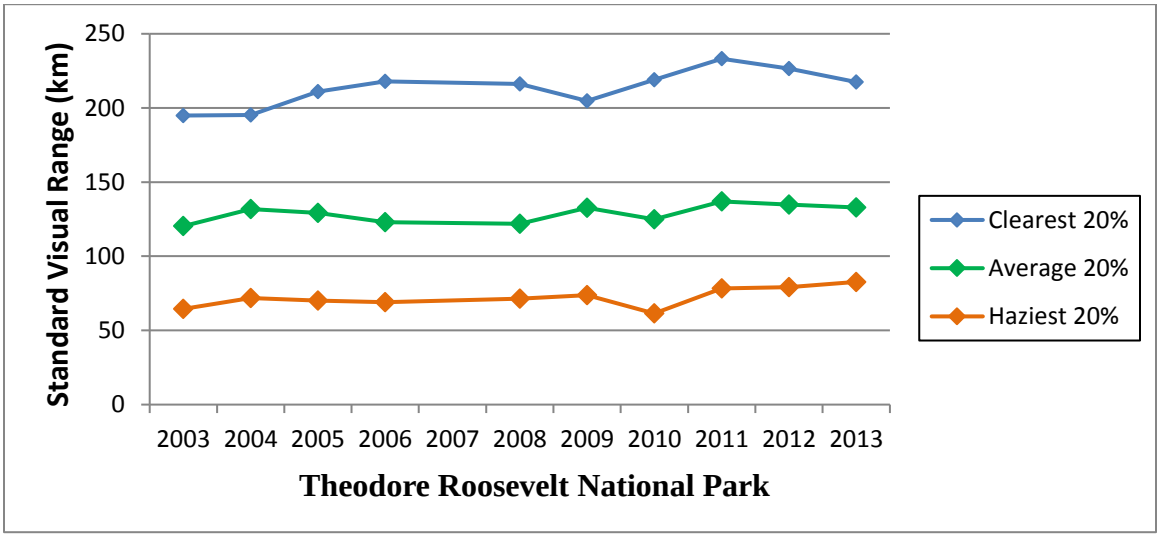
The order requires that after September 30, 2014, all existing and completed wells in the Bakken, Bakken/Three Forks, and/or Three Forks Pool be evaluated for compliance. A well is in compliance with the order if the gas capture percentage is consistent with the gas capture targets. If gas capture targets are not met, well production is limited to 100 or 200 barrels of oil per day depending on site-specific activities. Exemptions are allowed for: (1) wells that have received an exemption to North Dakota Century Code Section 38-08-06.4; (2) the first horizontal well completed in a Bakken, Bakken/Three Forks, and/or Three Forks Pool non-overlapping spacing unit; or (3) the first 90 days commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run.

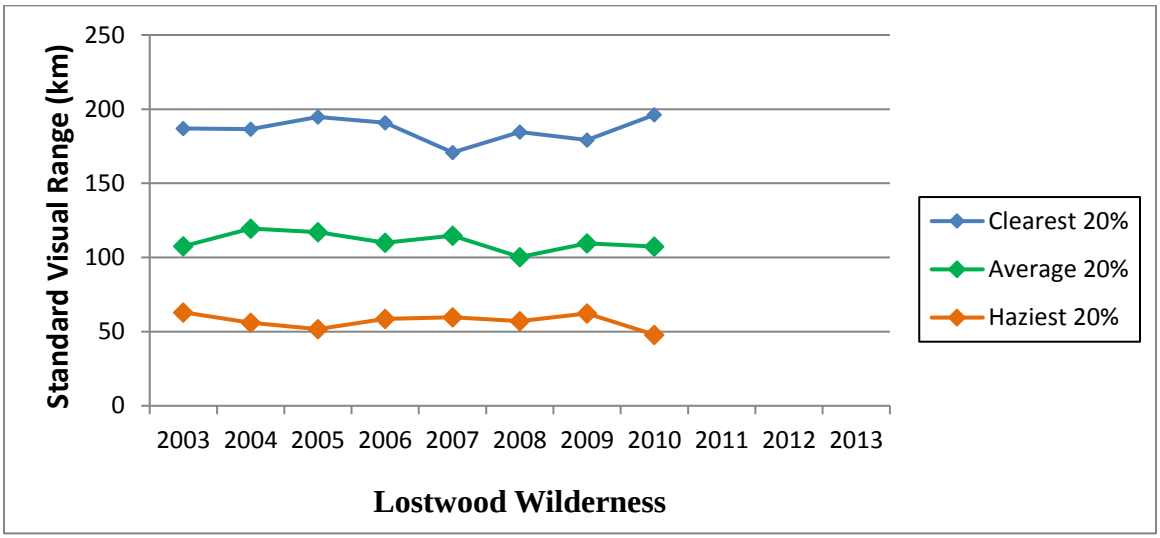
Figure 3.3.2 Air Quality Trends



Sources: Data derived from NDDOH 2006, 2007, 2008, 2009, 2010, 2012a, 2012b, 2013, 2014.

Figure 3.3.3 Visibility Trends in Nearby Class I Areas





Source: Data derived from IMPROVE 2014.

Air resources also include visibility, which can be assessed in terms of the standard visual range (in kilometers or miles) that a person can distinguish a large dark object. Visibility degradation is primarily due to anthropogenic sulfate, nitrate, and particulate emissions and wildfires. Air pollutants affecting visibility can be transported hundreds of miles. Figure 3.3.3 illustrates visibility trends based on IMPROVE monitoring data from 2003-2013 at the two Class I areas in North Dakota: Lostwood Wilderness and Theodore Roosevelt National Park. Because visibility is highly variable throughout the year, it is characterized by three groupings: the clearest 20% days, average 20% days, and haziest 20% days. Monitoring data for the Lostwood Wilderness are not available for 2010-2013. A slight improving trend in visibility is apparent at Theodore Roosevelt National Park. At the Lostwood Wilderness, there was no apparent trend from 2003 to 2010.

Sulfur, nitrogen, and acid deposition rates in the study area are among the lowest in the nation, as measured at the Theodore Roosevelt National Park South Unit during 2012 (NADP 2013). Dry deposition was 2 kilograms per hectare (kg/ha) for sulfate and 3 kg/ha for nitrate. Nitrogen and sulfur wet deposition were 173 equivalents per hectare. Precipitation pH was 5.8, which EPA does not consider acidic. Hydrogen ion wet deposition was extremely low at less than 0.01 kg/ha. Lake acidification is unlikely with these deposition values and to date has not been reported at lakes in the area.

3.3.2 Climate Change

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC 2013)." Climate change and climate science are discussed in detail in the *Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota* (BLM 2010). This document is incorporated by reference into this EA.

The IPCC states, "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased (IPCC 2013)." The global average surface temperature has increased approximately 1.5°F from 1880 to 2012 (IPCC 2013). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth's atmosphere, up to 4-12 miles above the earth). Other indications of global climate change described by the IPCC (BLM 2010) include:

- Rates of surface warming increased in the mid-1970s and the global land surface has been warming at about double the rate of ocean surface warming since then;
- Eleven of the last 12 years rank among the 12 warmest years on record since 1850;
- Lower-tropospheric temperatures have slightly greater warming rates than the earth's surface from 1958-2005.

Earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (BLM 2010). Current ongoing global climate change is caused, in part, by the atmospheric buildup of GHGs, which may persist for decades or even centuries. Each GHG has a global warming potential that accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere (BLM 2010). Emissions of GHGs such as CO_2, methane, N_2O, and halocarbons since the start of the industrial revolution have substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth's surface and re-emit a larger portion of the earth's heat back to the earth rather than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO_2 and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO_2 may last 50 to 200 years in the atmosphere while methane has an average atmospheric life time of 12 years (BLM 2010). Based on the global warming potentials put forth in EPA regulations (40 *Code of Regulations* Part 98), companies must report GHG emissions using global warming potentials of 1 for CO_2, 25 for methane, and 298 for N_2O. The BLM uses these global warming potentials to provide consistent comparisons with federal GHG emission inventories.

Climate change impacts will occur at global, national, regional, and local scales. The USEPA identifies western North Dakota as part of the Great Plains region. The following summary characterizes potential changes identified by the U.S. Climate Change Science Program (CCSP 2008) that are expected to occur at the regional scale (BLM 2010).

- The region is expected to experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.
- Earlier snowmelt means that peak stream flow will be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs will be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patterns will shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Large-scale shifts have already occurred in the ranges of many species and the timing of the seasons and animal migrations. These shifts will continue. Climate changes include the arrival of spring an average of 10 days to 2 weeks earlier through much of the U.S. compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Air quality will be degraded due to increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff will increase fire risks.
- Grasslands and rangelands will expand into previously forested areas

Additional projected changes associated with climate change in North Dakota include (BLM 2010):

- Temperature increases in North Dakota are predicted to be between 3 to 5°F at mid-21st century. As the mean temperature rises, more heat waves are predicted to occur.
- Precipitation is expected to increase during winter and spring, decrease slightly in summer, and remain relatively unchanged in the fall.
- For the western portion of the state, annual median runoff is expected to decrease between 2 and 5 percent by mid-21st century.
- Crop yields may increase in North Dakota due to predicted temperature increases.

- North Dakota's Prairie Pothole wetlands are expected to decline in quality, due to their shallow depths and rapid evaporation rates. Shrinking wetlands may lead to decreased waterfowl populations.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase of 393 percent in the median annual area burned by wildland fires in the western portion of North Dakota, based on a 1°C global average temperature increase (1°C = 33.8°F).

While long-range regional changes will occur within the NDFO, it is impossible to predict precisely when these changes will occur.

3.4 Visual Resources

The Federal Land Policy and Management Act requires that the BLM consider the scenic values of public land as a resource that merits management and preservation, as determined through the land use planning process. Visual Resource Management (VRM) classifications are only applied to BLM-administered surface.

The NDFO did not assign VRM classifications in the current Resource Management Plan. However, the following general objective and management actions were approved in the RMP:

RMP Objective: "To maintain visual qualities wherever possible."

RMP Management Actions:

- Consider impacts to the visible landscape during all phases of land use planning.
- Ensure that the high visual qualities of National Park Service Units are considered in cooperation with the NPS when a specific mineral lease or developmental action is proposed that potentially affects existing visual qualities.

3.5 Cultural Resources

The BLM is responsible for identifying, protecting, managing, and enhancing cultural resources located on public lands, or that may be affected by a BLM undertaking on BLM-administered or non-federal lands, in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended. Cultural resources are defined as prehistoric or historic district, site, building, structure, or object significant in American history, architecture, archeology, engineering, and culture (36 CFR 60.1). Cultural resources also refer to artifacts, records, remains, and properties of traditional religious and cultural importance to an Indian tribe (36 CFR 800.16(l)(1)).

Cultural resources are evaluated with reference to their eligibility for listing on the National Register of Historic Places (NRHP). Each resource is considered on a case-by-case basis. Common prehistoric resource types in North Dakota include stone circles, stone cairns, rock art, lithic artifacts, pottery remains, earthlodge villages, rock alignments, bone concentrations, eagle-trapping pits, and lithic procurement areas. Common historic site types in North Dakota are

material remains of human life or activities over 50 years in age including homesteads, farmsteads, dumps, schools, roads, railroad grades, trails, trading posts, and military forts.

There are a number of areas designated as National Historic Landmarks or State Historic Sites within the Williston Basin of western North Dakota. They include the:

- Killdeer Mountain Battlefield State Historic Site,
- Elkhorn Ranch site within Theodore Roosevelt National Park,
- Lynch Knife River Flint Quarry site,
- Chateau de Mores State Historical Site,
- Fort Buford State Historic Site,
- Fort Union Trading Post National Historic Site,
- Fort Dilts State Historic Site, and
- Lewis & Clark National Historic Trail.

3.6 Native American Religious Concerns

The BLM's management of Native American Religious concerns is guided through Manual 8120: *Tribal Consultation under Cultural Resources Authorities* and Handbook 8120-1: *Guidelines for Conducting Tribal Consultation*. Generally, areas of concern to Native Americans are referred to as "Traditional Cultural Properties" (TCPs) which are defined as cultural properties eligible for the National Register of Historic Places because of its association with cultural practices or beliefs that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community.

There are several locations within the Williston Basin in western North Dakota that are a concern to Native Americans. Cultural resources associated with Native American ceremonies, religious practices, and important events in history have the highest probability of being of religious or of cultural concern to Native Americans. Common sites of concern are burials, rock art, monumental rock features, eagle catching pits, sweat lodges, offering and prayer loci, battle sites, and stone rings (Deaver 1995:3.11 – 3.25).

The Mandan, Hidatsa, and Arikara Nation attach religious and cultural significance to the Missouri River (Murray et al 2011; Sundstom 1997:7), Black Butte (Deaver 1995), and the Blue Buttes (Deaver 1995:4.66). In addition, Grassy Butte, Bullion Butte, the Sentinel Buttes, and the Little Missouri River were the setting for Hidatsa, Mandan, and Arikara myths (Sundstom 1997:6-8). It is likely that the Killdeer Mountain Battlefield and Cannonball River are of concern to many of the Sioux tribes (Sundstom 1997:8).

Bowers (1965:12) identifies specific buttes associated with the Hidatasa Earthnaming Bundle. The ceremonies tied to the Earthnaming Bundle were linked to specific spirts (e.g., Buffalo), and were residents of named buttes and the adjacent prairies in North Dakota. For example, spirts were associated with the Killdeer Mountains, Rosebud Butte and at least a dozen more buttes (i.e.., White Butte, Singing Butte, Ghost Singing Butte, Crow Butte, Fox Singing Butte, Little Heart Butte, Heart Singing Butte, Square Butte, Buffalo Home Butte, Lone Butte, Opposite Butte and Dog Den Butte).

3.7 Fluid Minerals

Oil and gas exploration and development in North Dakota has been concentrated in the Williston Basin western portion of North Dakota. The Williston Basin covers approximately 200,000 square miles of western North Dakota, northwestern South Dakota, eastern Montana, southern Saskatchewan, and extreme southwestern Manitoba. As of June 2015, there are approximately 12,383 active oil/gas wells in western North Dakota (Table 3.7.1).

Table 3.7.1. Total number of wells in the area of analysis.

Well Status	Federal Wells	Private and State Wells	Indian Wells	Total
Active Oil/Gas Wells	1,795	10,126	462	**12,383**
Permitted/Drilling/Constructed	184	954	131	**1,269**
Temporarily Abandoned/ Abandoned/Plugged/Inactive	2,209	11,417	200	**13,826**
TOTAL	**4,188**	**22,497**	**793**	**27,478**

Source: NDIC GIS database, accessed June 10, 2015.

Current technology allows wells to be drilled horizontally from the same well pad, resulting in multi-well pads composed of wells from multiple mineral owners (e.g. Federal, Indian, Private, State). Multi-well pads are commonly used for producing Bakken or Three Forks Formation wells in the Williston Basin. They are typically larger in size to accommodate both drilling and production operations of multiple wells, but reduce the overall surface disturbance on a per well basis. Production facilities can be used by all the wells in the same communitization agreement (CA) or lease. In order for multiple CAs or leases to produce to common storage tanks or through a single gas sales meter, an operator must apply for and receive BLM approval for commingling of production.

Communitization agreements are federal agreements used for development of Bakken or Three Forks Formation wells in the Williston Basin. A CA allows for the development of a separate lease or a portion of a lease that cannot be independently developed and operated in conformity with the state established well spacing or well development program. The leases within a CA are typically composed of multiple mineral owners (e.g. Federal, Indian, Private, State) sharing in the benefits of the well drilled in the spacing unit. Like multi-well pads, CAs reduce the amount of surface disturbance and eliminate unnecessary wells, roads, pipelines, and lease equipment while improving mineral drainage and protecting correlative rights. As of June 2015 there were 1,026 Federal CAs and 443 Indian CAs in the NDFO.

Wells in the Williston Basin in North Dakota will produce at the highest gas rate in the first few years of production, and then they will steadily decline and produce lower volumes of gas for the remaining life of the well. There are multiple reasons for an operator to request flaring of associated oil-well gas. Some of those include:

- the operator has submitted a one-year gas capture plan in accordance to NTL-4A;
- the operator is unable to obtain a Right-of-Way from the surface owner(s) (private, government agency, or Indian) to install a natural gas gathering line;

- the well is connected to a gas sales line with inadequate capacity to handle the volumes of gas being produced;
- the gas produced does not meet standards for gas processing, the well produces a low gas volume for which a gas processing contract cannot be obtained; or
- the well is in a remote location with no current or future gas transmission plans.

An application for flaring of oil well gas would include an evaluation report supported by engineering, geologic, and economic data which demonstrates to the satisfaction of the Authorized Officer that flaring is justified in accordance to NTL-4A.

Most flaring in North Dakota occurs because the well is connected to gas sales pipelines with inadequate capacity to handle the volumes of gas being produced. This results in oil wells flaring associated gas sporadically throughout the year. The length of time an operator flares due to inadequate capacity varies and can be of short duration.

As of June 1, 2014, the NDIC adopted a new policy, Order 24665, to reduce gas flaring. This Order was revised on September 24, 2015. The Order requires all wells which produce from the Bakken, Three Forks, and Three Forks/Bakken or Sanish Pools to reduce the volume of gas flared by specified percentages and deadlines. The policy requires that all APDs submitted to NDIC must be accompanied by a Gas Capture Plan (GCP). The GCP has various requirements that must be met prior to approval of an APD. These plans aim to ensure that all options for capturing gas are fully evaluated before a well is drilled. The State policy also requires that operators meet flaring reduction targets according to a prescribed timeline. For operators that do not meet the targets, the state policy provides for the restriction of oil production until the targets are met. The revised Order requires that by January 1, 2015, gas capture rates should be at 77 percent allowing 23 percent to be flared; and by November 1, 2020, gas capture rate should be at least 91 percent allowing 9 percent to be flared. In the March 2016 NDIC Director's Cut report, gas capture rates were at 87 percent capture, meeting the percent required in the policy.

3.8 Socio-Economic Conditions

Oil and gas development, which includes the extraction of oil and gas, drilling of wells, and support activities, has significantly increased in North Dakota over the last decade as exploration in the Bakken Formation has intensified. Leasing, exploration, development and production of federal minerals stimulates economic activity within the state, influencing employment, income, and public revenues.

The analysis area for socio-economic conditions includes the following counties: Billings, Bowman, Burke, Divide, Dunn, Golden Valley, McKenzie, McLean, Mountrail, Stark, and Williams counties. The 2014 population for the analysis area was 107,907 residents with Billings County having the fewest residents (901) and Williams County the most (32,130) (Table 3.8.1) Unemployment rates are relatively low, ranging from 1.2 percent to 4.2 percent (Table 3.8.1). Both Billings and McLean counties have unemployment rates (3.0 and 4.2 percent respectively) higher than the average for North Dakota (2.8 percent). In 2014 there was an average of 97,379 jobs in the analysis area with a majority of them in Stark and Williams counties (Labor Market Information Center 2015). A majority of jobs in Dunn, McKenzie, Mountrail, and Williams counties were in the mining, oil and gas extraction; construction; and transportation and

warehousing industries (Table 3.8.1). Oil and gas development is often associated with increased jobs in construction and transportation due to building energy infrastructure and truck hauling of materials such as water and waste.

Annual wages associated with jobs in these three industries tend to be relatively high-for example annual wages for mining, oil and gas extraction industry ranged from $106,932 in Williams County to $97,244 in Mountrail County (Labor Market Information Center 2015). This highlights energy development as a major contributor to many of the local economies in the analysis area in terms of jobs and income.

Forty-nine percent of the federal revenues collected in association to oil and gas development (e.g. bonus bids, rent, and royalties) is redistributed back to the state of production. The state then redistributes these monies with half going towards North Dakota public education/school and the other half being returned to the county of production. This revenue helps fund county functions such as enforcing laws, administering justice, collecting and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and keeping records. Other county functions that may be funded include operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

Based on sales year data, the amount of revenues associated with federal oil and gas activities in the analysis area counties redistributed back to North Dakota in 2014 was approximately $104,419,578 (ONRR 2015). Revenues associated with gas avoidably lost to flaring or venting occurred in Burke and Dunn counties with a total of $405 being received by the federal government in 2014 (ONRR 2015). As discussed in Section 1.2, the BLM has the authority to allow venting or flaring of an oil-well gas under certain conditions pursuant to NTL-4A. Through the review process of the SN applications, the BLM will determine whether each request is an avoidable loss of gas or unavoidable loss of gas as a separate decision.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…" (Executive Order 12989).

Minority populations as defined by Council on Environmental Quality (CEQ) guidance under the National Environmental Policy Act (CEQ 1997) include individuals in the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified where "(a) the minority population of the

Table 3.8.1 Analysis Area Social and Economic Conditions.

	North Dakota	Billings County	Bowman County	Burke County	Divide County	Dunn County	Golden Valley County	McKenzie County	McLean County	Mountrail County	Stark County	Williams County
Total Population (2014)[1]	739,482	901	3,247	2,245	2,432	4,399	1,825	10,996	9,578	9,782	30,372	32,130
Unemployment Rate, Annual Average (2014)[2]	2.8%	3.0%	1.8%	2.8%	1.5%	1.3%	2.2%	1.5%	4.2%	1.3%	1.6%	1.2%
Percent of Total Jobs by Industry (2014 average annual)[3]												
Agriculture, Forestry, Fishing and Hunting	1.0%	****	3.1%	0.0%	0.0%	0.3%	3.9%	0.4%	1.4%	0.1%	0.2%	****
Mining, Quarrying, and Oil and Gas Extraction	6.7%	9.2%	7.6%	8.2%	13.3%	32.8%	****	18.2%	****	20.4%	20.9%	35.5%
Utilities	0.8%	****	****	****	****	0.2%	****	0.6%	****	****	0.4%	0.6%
Construction	7.8%	1.7%	11.0%	9.0%	3.7%	16.2%	2.3%	22.0%	6.8%	15.8%	9.4%	11.6%
Manufacturing	5.8%	0.0%	1.7%	0.0%	****	****	****	0.1%	****	****	5.5%	1.2%
Wholesale Trade	6.1%	****	13.1%	7.2%	****	2.3%	14.4%	4.7%	8.5%	4.8%	7.0%	7.8%
Retail Trade	11.4%	4.0%	11.1%	6.0%	8.4%	4.7%	9.0%	5.9%	7.7%	8.2%	9.9%	6.4%
Transportation and Warehousing	5.0%	9.5%	3.4%	21.0%	16.0%	13.2%	8.1%	17.9%	2.6%	20.6%	8.8%	9.1%
Information	1.5%	0.0%	1.2%	****	****	****	****	****	****	****	1.1%	0.5%

Finance and Insurance	4.0%	na	4.5%	3.5%	2.9%	0.7%	4.8%	1.1%	3.7%	1.2%	1.8%	1.0%
Real Estate and Rental and Leasing	1.3%	****	****	0.5%	1.3%	1.4%	na	1.6%	0.7%	0.3%	2.0%	3.7%
Professional and Technical Services	3.8%	0.7%	2.1%	1.3%	1.9%	3.7%	3.9%	2.9%	0.7%	3.1%	2.9%	3.0%
Management of Companies and Enterprises	1.2%	na	****	****	na	na	na	****	****	****	0.2%	****
Administrative and Waste Services	3.2%	1.3%	****	****	2.8%	1.1%	0.0%	1.0%	0.8%	1.0%	2.3%	2.6%
Educational Services	0.5%	0.0%	0.0%	0.0%	****	na	****	0.1%	****	0.0%	0.3%	0.2%
	North Dakota	Billings County	Bowman County	Burke County	Divide County	Dunn County	Golden Valley County	McKenzie County	McLean County	Mountrail County	Stark County	Williams County
Health Care and Social Assistance	12.5%	0.0%	15.7%	2.1%	****	****	17.0%	2.8%	11.5%	3.1%	7.4%	3.5%
Arts, Entertainment, and Recreation	1.0%	****	0.8%	0.8%	****	0.4%	****	0.6%	1.1%	****	0.8%	0.2%
Accommodation and Food Services	8.1%	11.3%	7.2%	4.6%	8.6%	5.2%	3.5%	5.8%	6.1%	4.1%	7.4%	6.0%
Other Services (except Public Administration)	2.8%	1.2%	2.1%	1.8%	1.2%	2.5%	4.4%	2.2%	1.7%	1.2%	2.8%	1.5%

Government (federal, state, local)	15.4%	29.2%	14.5%	29.0%	17.0%	9.2%	25.6%	12.0%	23.4%	11.8%	8.9%	5.1%
Percent Population (All Ages) Below Poverty Level[4] (2013)												
	11.6%	8.2%	8.0%	9.5%	9.0%	9.6%	11.7%	9.9%	10.6%	11.5%	8.7%	7.8%
Race Alone[1] (2014)												
White	89.1%	95.0%	95.8%	96.5%	96.6%	85.9%	96.7%	81.7%	90.6%	68.7%	93.9%	90.0%
Black or African American	2.1%	0.6%	0.3%	0.6%	0.7%	0.6%	0.8%	1.2%	0.3%	0.9%	1.7%	2.4%
American Indian and Alaska Native	5.4%	0.4%	2.5%	1.0%	0.7%	9.7%	1.2%	14.1%	7.2%	27.2%	1.3%	3.9%
Asian	1.3%	3.7%	0.2%	0.6%	0.7%	1.5%	0.2%	0.7%	0.1%	0.3%	1.4%	0.8%
Native Hawaiian and Other Pacific Islander	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
Two or More Races[1] (2014)	2.0%	0.3%	1.1%	1.3%	1.2%	2.3%	0.9%	2.3%	1.8%	2.9%	1.6%	2.9%
Hispanic[1] (2014)	3.2%	1.8%	4.7%	2.1%	3.9%	3.8%	2.7%	6.8%	2.1%	6.2%	4.9%	5.2%
Total Minority[5] (2014)	13.4%	6.3%	7.3%	5.5%	7.0%	17.0%	5.8%	23.5%	10.5%	35.2%	10.5%	14.5%

Source: [1]U.S. Census Bureau 2015. [2]Bureau of Labor Statistics 2015. [3]Labor Market Information Center 2015. [4]U.S. Census Bureau 2014. [5] Total minority is calculated as: (Total Population - Non-Hispanic White Alone population)/Total Population. The term "total minority population" refers to the part of the total population which is not classified by the race/ethnicity category Non-Hispanic White Alone by the U.S. Census Bureau. This definition is most inclusive of populations that may be considered as a minority population under EO 12898.

affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater…" (CEQ 1997). Additionally, "[a] minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds" (CEQ 1997). Low-income populations are determined by the U.S. Census Bureau based upon poverty thresholds developed every year.

U.S. Census data are used to determine whether the populations residing in the analysis area constitute an "environmental justice population" through meeting either of the following criteria:

- At least one-half of the population is of minority or low-income status; or
- The percentage of population that is of minority or low-income status is at least 10 percentage points higher than for the entire State of North Dakota.

Table 3.8.1 indicates the State of North Dakota has 11.6 percent of the population living below the poverty level in 2013 and a total minority population of 13.4 percent in 2014. None of the counties met the criteria above for low-income environmental justice populations. McKenzie and Mountrail counties have total minority populations that meet the criteria for constituting environmental justice populations. In 2014, Mountrail County met the criteria with a total minority percent of 35.2 and an American Indian/Alaska Native percent of 27.2 whereas the State of North Dakota has 13.4 percent of total minority and 5.4 percent of the population as American Indian/Alaska Native (Table 3.8.1). McKenzie County had a total minority percent of 23.5 percent which was largely driven by the American Indian/Alaska Native race and Hispanic or Latino ethnicity (14.1 and 6.8 percent respectively).

4.0 ENVIRONMENTAL IMPACTS

4.1 Assumptions and Methodology

The analytical assumptions and methodology listed below were developed by BLM resource specialists and petroleum engineers who relied on professional judgment of the resource and knowledge of flaring activity within the Williston Basin in western North Dakota. The BLM used production and GIS data from the BLM and NDIC databases to identify well locations, status, and production information.

BLM took into consideration NDIC Order 24665 to develop assumptions for this EA. The revised Order requires that by January 1, 2015, gas capture rate should be at 77 percent allowing 23 percent to be flared; and by November 1, 2020, gas capture rate should be at least 91 percent allowing 9 percent to be flared. See Appendix B for further details on the methodology and application of assumptions to determine gas production rates and quantities for this EA.

The BLM assumes that all operators will comply with applicable laws, regulations and BLM requirements. Under the general requirements for onshore oil and gas operations (43 CFR 3162.1), an operator shall comply with applicable laws and regulations. These include, but are not limited to, conducting all operations in a manner that results in maximum ultimate economic recovery of oil and gas with minimum waste.

The BLM assumes that no additional surface disturbance would occur as a result of evaluating the flaring requests and potential mitigation measures.

The BLM assumes that all wells that have sold natural gas associated with oil production are connected to a natural gas gathering pipeline to transport gas to a processing plant.

Based on the type of flaring SN request, one well may have multiple SN requests submitted for BLM review. The impacts to each resource may be associated to the number of SN requests submitted or the number of wells within the analysis area. Therefore, each resource will identify when the number of SN requests is being used as part of the impact analysis and when the number of wells is being used as part of the impact analysis.

For this EA, 173 wells are not connected to a sales pipeline. These 173 wells have 208 associated flaring sundry notices submitted. The BLM assumes 5 percent of the pending SN requests representing 9 wells (5% of 173 wells) would be required to capture and market the oil-well gas and gas would be flared from these wells intermittently based on pipeline capacity. The BLM assumes 80 percent of the pending sundry notices representing 138 wells (80% of 173 wells) would flare for a designated period of time (i.e. 1-year gas capture plan, ROW approval, etc.) which would result in gas capture upon installation of infrastructure and intermittent flaring based on pipeline capacity limitations. The BLM assumes 15 percent of the pending sundry notices representing 26 wells (15% of 173 wells) would flare long-term (i.e. remote location, poor gas quality, low gas volume, etc.).Wells flaring long term would be subjected to NDIC operator flaring limits.

For this EA, the BLM assumes the average thousand cubic feet (MCF) of gas flared by an oil well per day in North Dakota is approximately 121 MCF per day. This chapter describes the environmental effects (direct, indirect, and cumulative) that would result from the alternatives. Environmental consequences are discussed below by alternative to the extent possible at this time for the resources described in Chapter 3. As per NEPA regulations at 40 CFR 1502.14(f), 40 CFR 1502.16(h), and 40 CFR 1508.20, mitigation measures to reduce, avoid, or minimize potential impacts of the proposed action are identified by resource below.

4.2 Reasonably Foreseeable Development

The Reasonably Foreseeable Development (RFD) scenario for this EA is based on information and assumptions contained in the RFD developed in 2009, revised in 2011 for the NDFO Resource Management Plan (RMP), and revised again in 2014 for the NDFO RMP to consider the increased rate of development in the Williston Basin portion of North Dakota (Map 1). The 2014 RFD revision contains projections of oil and gas wells for the western portion of the NDFO area. This information was used in the analysis of this EA.

The 2014 RFD revision took into consideration the assumptions and methodology from the previous reports completed. It also incorporated current changes in development that resulted in an increase projection of oil and gas development for the next 20 years. For this EA, only the first 5 years of projected development was used to complete this environmental analysis. In the next 5 years, the 2014 RFD revision projects a baseline total of 6,648 wells to be producing wells in the western portion of North Dakota. Of those 6,648 total wells, 1,263 are Federal, 399 are Indian, and 4,986 are Fee/State administered wells.

Based on 2014 RFD, for the next five years, the BLM assumes a total of 6,648 wells are projected to produce gas and flare an average 121 MCFPD per well. The gas capture percentages requirements from NDIC Order 24665 were applied to the projected number of wells for the next five years to identify projected capture and projected short-term and long-term flaring by year. See Appendix B for specific percentages and projections per year.

4.3 Alternative A (No Action Alternative)

4.3.1 Direct Effects Common to All Resources

Under Alternative A, the 1,770[1] pending SN requests and future SN requests would be reviewed and responded to on a case-by-case basis in accordance with NEPA. Each SN request would have an individual NEPA document analyzing impacts from an individual request.

The direct and indirect impacts would be similar to those described in Section 4.4 Alternative B; however, completing individual NEPA reviews would limit the scale and scope of analysis, not adequately disclose cumulative effects, and increase review time for all requests. Increased review time frames would be inefficient and result in a backlog of pending SN requests. Not processing requests to flare in a timely manner would also limit BLM's opportunity to mitigate environmental impacts at the time they are occurring. Surface management would remain the same and ongoing oil and gas development would continue on surrounding Federal, private, and State leases. Future flaring SN requests submitted by operators and identification of environmental mitigation measures would be completed on a case-by-case basis.

4.3.2.2 Cumulative Effects Common to All Resources:

The cumulative effects would be the similar to those described in Section 4.4.6. Cumulative Impacts Alternative B; however, reviews for current and future flaring requests, and the identification of environmental mitigation measures would be completed on a case-by-case basis. This would result in inefficiencies and a continual backlog of pending SN requests.

4.4 Alternative B (Proposed Action BLM Preferred Alternative)

4.4.1 Air Resources

4.4.1.1 Air Quality

Associated gas flaring is a combustion process, creating primarily CO_2, water vapor, and combustion by-products that can include hazardous air pollutants (HAPs). Flaring does not combust all organic compounds because it is an incomplete process. Flares must meet North Dakota Department of Health and EPA requirements. EPA's New Source Performance Standards (NSPS) in 40 CFR §60.18 and National Emission Standards for Hazardous Air Pollutants (NESHAPS) in 40 CFR 63.11, include equipment design and operational standards for flares and requires they be operated and maintained consistent with "good air pollution control practices". This has been interpreted to mean a destruction efficiency of 98 percent. The NSPS also require no visible emissions, except for up to 5 minutes every 2 hours.

Appendix C contains criteria air pollutant and HAP emission calculations for flared gas on a pound per million standard cubic foot (lb/MMSCF) basis and annual basis in terms of short tons per year. The calculations use associated gas composition and assume that 2 percent of the gas passes through the flare without combustion and 98 percent is completely combusted. Annual emissions for the year with the greatest quantity of flared gas are shown in Table 4.4.1. The emissions are compared to statewide North Dakota criteria pollutant emissions, provided as a percentage of EPA's year 2011 National Emissions Inventory (NEI).

Table 4.4.1. Criteria and Hazardous Air Pollutant Annual Emissions

Pollutant	Cumulative Annual Emissions (short tons/year)		Flaring Emissions as a Percent of total ND Emissions (Year 2019)
	Maximum Annual Flaring Emissions (2019)	North Dakota (2011 NEI)	
PM_{10}	589	365,857	<1%
$PM_{2.5}$	589	90,086	<1%
NOx	8,282	163,788	54%
SO_2	8,947	1,074,343	≤1%
CO	6,512	488,511	1%

VOC	32,285	281,219	11%
HAPs	1,431	N/A	N/A

NEI = National Emissions Inventory
Short tons = 2,000 lb
Source: EPA 2015.

As shown in Table 4.4.1, criteria air pollutant emissions due to cumulative flaring in northwestern North Dakota would constitute a small percentage of statewide emissions. These emissions represent an increase in emissions in the specific locations where flaring would be allowed under this alternative. However, the emissions may or may not represent an increase in the region, given the flaring reductions required by the NDIC.

Flaring emissions would occur over a wide geographic area covering many counties with relatively flat terrain and with good pollutant dispersion characteristics. Given the good air quality in the planning area, flaring emissions are not expected to affect air quality.

Flaring is not expected to cause visible plumes, except for short periods of time. Some impacts to visibility due to emissions of fine particulate, NO_x, and SO_2 could potentially occur because these pollutants can contribute to regional haze. Because the net increase in these pollutants cannot be estimated due to regional reductions in flaring, impacts to regional haze are difficult to predict.

4.4.1.2 Greenhouse Gas Emissions at the NDFO and Project Scales

The primary GHGs of concern emitted by flaring are CO_2, CH_4, and N_2O. Associated gas that bypasses the flare consists of approximately 70 percent by volume CH_4 (WRAP 2014). The total climate change effect of aggregated GHGs is estimated in terms of carbon dioxide equivalent (CO_2e), which is calculated by multiplying the quantity of each GHG by its global warming potential (GWP) and summing the results. In order to make meaningful comparisons to EPA emission inventories, regulatory GWPs from 40 CFR Part 98, Table A-1 are used in the calculations. These GWPs reflect the 100-year impact of GHG emissions and are equal to 1 for CO_2, 25 for CH_4, and 298 for N_2O. For every molecule of CH_4 that is flared, one molecule of CO_2 is produced and for every metric ton of CH_4 flared, approximately 2.9 metric tons of CO_2 are formed. Put in terms of CO_2e, each metric ton of CH_4 flared is equivalent to 25 metric tons of CO_2e entering the flare and results in 2.9 metric tons of CO_2e exiting the flare. Flaring converts a high GWP gas to a lower GWP gas.

Other GWPs based on different time frames can be used by the reader by selecting desired GWP values and multiplying them by the emissions of each individual GHG.

Appendix C provides an estimate of GHG emissions on a pound per million standard cubic foot (lb/MMSCF) basis and an annual basis in terms of short tons per year and metric tons per year. Table 4.4.2 summarizes GHG emissions in terms of individual GHG emissions and as CO_2e.

Table 4.4.2 Greenhouse Gas Annual Emissions

GHG	Maximum Cumulative Annual Flaring Emissions (short tons/year)	(metric tons/year)
CO_2	9,303,940	8,440,348
CH_4	28,979	26,289
N_2O	171	155
CO_2e		**9,143,690**

Short tons = 2,000 lb
Metric tons = 2,205 lb

Flaring GHG emissions can be put into context by comparing them to state and national GHG emission inventories. An EPA inventory of GHG emissions emitted by large sources in North Dakota estimates emissions at 37,003,286 metric tons per year (EPA 2015a). This number does not include emissions from residential heating, vehicular travel, and other sources with small emissions on a per household or per vehicle basis. Alternative B flaring emissions would be approximately 25 percent of this large-source North Dakota emission inventory. A more comprehensive national inventory including nearly all types of GHG emissions estimates national CO_2e emissions of 6.673 billion metric tons per year for 2013 (EPA 2015b). Alternative B flaring emissions would be 0.14 percent of this national inventory.

4.4.1.3 Climate Change

Flaring releases increased GHG emissions into the atmosphere because no energy benefit, such as electricity production or resident heating, is obtained from the flaring process. Additional natural gas must be produced and combusted in order to provide these energy benefits. Under Alternative B, atmospheric GHG concentrations would be slightly greater than they would be otherwise. However, given the small percentage of GHG emissions compared to state and national emission inventories, the global change would be extremely small.

The extent of climate effects due to the increase in GHG emissions is also difficult to predict because the change in emissions is so small. Climate change models cannot differentiate global, regional, state, and local climate impacts for changes at this scale. Furthermore, impacts to human health and ecosystems cannot be accurately predicted due to these small emission changes.

4.4.1.4 Mitigation

When compared with venting associated gas, flaring is a form of mitigation because it destroys most VOCs and HAPs in the gas by converting them to CO_2 and other compounds. As described earlier, flaring also mitigates GHG emissions by converting a high GWP gas (CH_4) to a low GWP gas (CO_2).

Air pollutant and climate change impacts could be minimized or mitigated by capturing the associated gas.

4.4.2 Visual Resources

4.4.2.1 Direct and Indirect Effects

There are no SN requests to flare on BLM administered lands; therefore, the 1,770[1] SN requests to flare on existing facilities would have no impacts to visual resources on BLM administered lands.

Potential impacts from flaring requests from future facilities from BLM administered wells and State administered wells throughout western North Dakota would include the introduction of visual contrast and degradation of scenic quality by the artificial lighting of the landscape that may otherwise be unlit. It is expected that the majority of flaring requests would be short term (less than 5 years) and result in negligible impacts due to existing infrastructure on the existing well pad (e.g. tanks, pump jacks, heater-treaters, etc.), application of NDIC Order 24665, increased beneficial use gas, and the decrease in gas production over the life of the well.

4.4.2.2 Mitigation

Application and implementation of the facility design features/mitigation measures addressed in the proposed action would provide the necessary measures to protect visual resources when a SN request to flare is proposed on BLM administered lands. Additional site specific mitigation measures for future requests from new wells and facilities to flare oil-well gas on BLM administered lands, would be determined on a case-by-case basis to maintain the visual qualities or scenic value of the area.

For future Federal APDs on BLM administered surface, the BLM would apply appropriate BLM best management practices for visual resources, which would serve to mitigate flaring activities on the well pad. Mitigation measures applied to the APD would include, but not be limited to, proper site selection, reduction of visibility, and appropriate color(s)/color schemes that blend with the background. Repetition of form, line, color and texture when designing projects would reduce contrasts between landscape and development. This would be managed as part of the Surface Use Plan of the APD.

4.4.3 Cultural Resources

4.4.3.1 Direct and Indirect Effects

The 1,770[1] requests to flare located on existing facilities, would not introduce new elements to the landscape.

Of the 1,770[1] SN requests located on existing facilities, there are no requests to flare gas within the viewsheds of the Chateau de Mores State Historical Site, the Fort Dilts State Historic Site, and the Lynch Knife River Flint Quarry site.

Of the 1,770[1] SN requests, there are no requests with ongoing flaring on existing facilities within the viewsheds of the Killdeer Mountain Battlefield State Historic Site, the Fort Buford State Historic Site, the Fort Union Trading Post National Historic Site, or the Lewis & Clark National Historic Trail.

Of the 1,770[1] SN requests, there is one request to flare on the Morgan Draw Federal 1 well facility which is not connected to a pipeline and has ongoing flaring within the viewshed of Theodore Roosevelt Greater Elkhorn Ranchlands. The well is located on U.S. Forest Service Land and is not connected to a pipeline. Flaring from this well is infrequent and low volume, averaging 8 Mcf per month from 2011 – 2015. Since flaring from the Morgan Draw Federal 1 well is historically low volume and continues to be low volume, this well does not have the potential to introduce new elements to the landscape. Therefore, flaring from this well would not have the potential to affect cultural, scientific, or historic resources.

Future flaring requests, or future APDs, has the potential to introduce visual, atmospheric or audible elements that would diminish the integrity of a property's setting and feel. However, applying mitigation measures to these future requests on new facilities and applications would reduce, avoid, or minimize potential impacts to the visual, atmospheric or audible elements of a historic or cultural property's setting or feel in accordance to Section 106.

4.4.3.2 Mitigation

The BLM has the authority to protect the viewsheds of cultural and historic properties for federally administered wells on both federal and non-federal surface under the NHPA and 36 CFR 800 – Protection of Historic Properties. In addition, mitigation requirements for venting and flaring within the viewsheds of historic or cultural properties are authorized under the NEPA, section 6.8.4.

The pending 1,770[1] SN requests on existing locations would not require the application or implementation of design features/mitigation measures. Application and implementation of the project design features/mitigation measures would be applied to future requests on new facilities, or future APDs, with the potential to introduce visual, atmospheric or audible elements diminishing the integrity of a property's setting or feel in accordance with Section 106. Project design features/mitigation measures would provide the necessary measures to reduce, avoid, or minimize potential impacts to cultural or historic properties. Site specific mitigation measures, including design features proposed by the operator would be developed during review of the application to reduce, avoid, or minimize potential impacts to historic or cultural property's setting or feel in accordance with Section 106.

For future APDs, application of standard lease terms, stipulations, and cultural lease notices on the APD would provide additional mechanisms to protect cultural or historic properties that may be affected by flaring. The NDFO would conduct necessary viewshed analysis, as outlined in Appendix D, to identify potential impacts to a historic property's setting or feel and where viewshed is integral to the sites integrity and therefore its eligibility to the NRHP. Site specific mitigation measures could include but are not limited to the project design features/mitigation measures addressed in the proposed action to reduce, avoid, or minimize potential impacts to a historic property's setting or feel in accordance with Section 106.

4.4.4 Native American Religious Concerns

4.4.4.1 Direct and Indirect Effects

The 1,770[1] requests to flare located on existing facilities would not impact Native American religious concerns. Flaring on an existing location would not interfere with the performance of

traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act (AIRFA) or EO 13007 and would not prevent tribes from visiting sacred sites or prevent possession of sacred objects.

Potential impacts from flaring requests on new facilities or future APDs submitted for BLM review have the potential to introduce visual, atmospheric or audible elements with possible impacts for Native American Religious Concerns and/or interference with performance of traditional ceremonies and rituals.

4.4.4.2 Mitigation

Mitigation would be the same as section 4.4.3.2 above. The NDFO would continue to invite interested parties to consult about historic properties of religious and cultural significance to Native Americans.

4.4.5 Socio-Economic Conditions

4.4.5.1 Direct and Indirect Effects

Application of mitigation measures to future APDs could result in a cost increase to the operator. Mitigation would be determined during the APD review and associated NEPA document, and would depend on factors such as proposed facilities, topography, proximity to historic properties, etc.

In regards to the American Indian/Alaska Natives environmental justice populations, the 1,770[1] requests to flare located on existing facilities would not impact Native American religious concerns. Flaring on an existing location would not interfere with the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act (AIRFA) or EO 13007 and would not prevent tribes from visiting sacred sites or prevent possession of sacred objects.

4.4.5.2 Mitigation

Mitigation for the American Indian/Alaska Natives environmental justice populations would be the same as section 4.4.4.2 and 4.4.3.2. The NDFO would continue to invite interested parties to consult about historic properties' that are of religious and cultural significance to Native Americans.

4.4.6 Cumulative Impacts- Alternative B

Cumulative impacts are those impacts resulting from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7). This section describes cumulative impacts associated with this project on resources.

4.4.6.1 Past, Present and Reasonably Foreseeable Future Actions

Past, present, or reasonably foreseeable future actions that affect the same components of the environment as the Proposed Action, are: drilling and producing of new and existing wells on state, private, Indian, and Federal minerals, installation of new infrastructure and roads, and utility rights-of-way. Additional flaring of gas from state, private, Federal and Indian oil-wells is expected but in lower volumes for short duration due to the requirements in NDIC Order 24665. The revised Order requires that by January 1, 2015, gas capture rate should be at 77 percent

allowing 23 percent to be flared; and by November 1, 2020, gas capture rate should be at least 91 percent allowing 9 percent to be flared.

4.4.6.2 Cumulative Impacts by Resource

Cumulative effects for all resources in the NDFO are described in the final RMP/EIS (pgs. 22 to 28). Anticipated flaring activity associated with the SNs being analyzed in this EA is described in this document's cumulative effects analysis for air resources, socio-economic conditions, cultural resources, and visual resources.

Anticipated development activities associated with the SN requests considered in this EA are within the range of assumptions used and effects described in this cumulative effects analysis for resources other than air resources, economic, cultural resources, and visual resources.

4.4.6.3 Greenhouse Gas Emissions and Cumulative Impacts on Climate Change

GHG emission cumulative impacts are extremely difficult to predict due to the many sources of GHG emissions at the local, state, national, and global scales. Within the planning area, cumulative GHG emissions from oil and gas operations are expected to decline as greater percentages of associated gas are captured due to recent NDIC regulations. Oil and gas companies are also reducing GHG emissions due to GHG emission reporting programs and public pressure.

Regional, state, and national GHG emissions are expected to decline due to recently promulgated EPA regulations that reduce vehicle emissions and proposed regulations, such as the Clean Power Plan, that will significantly reduce GHG emissions from power plants.

Substantial global GHG emissions reductions are becoming more likely as more nations are recognizing climate change impacts to their resources and economics and as they are imposing regulations to reduce these emissions.

Given these changes on such large scales, it is difficult to determine if global cumulative GHG emissions will increase or decrease.

4.4.6.4 Cumulative Impacts of Climate Change

Cumulative climate change impacts on human health, ecosystems, and economies will depend on GHG emissions, atmospheric GHG concentrations, and the ability to mitigate climate change impacts by developing more resilient systems. Due to the longevity of GHGs in the atmosphere, climate change impacts will continue to increase for many years, regardless of whether global GHG emissions increase, decrease, or remain stable over the next 5-6 years.

4.4.6.5 Cumulative Impacts to Visual Resources

While impacts to visual resources are assumed to be short term in nature, the location of the impacts would extend across the landscape over time with additional development and contributing to cumulative visual effects in the project area.

4.4.6.6 Cumulative Impacts to Cultural Resources

Cultural resources have been affected by past and current land uses including agricultural, transportation, and mineral development, which continue to impact resource values today throughout western North Dakota. Of the 1,770[1] SN requests, there are 102 SN requests for wells that are connected to pipelines and have flared oil well gas within the viewshed of the following five areas. The numbers of SN requests are as follows:

- 75 requests in the Lewis & Clark National Historic Trail;
- 6 requests in the Fort Union Trading Post National Historic Site;
- 2 requests in the Killdeer Mountain Battlefield State Historic Site;
- 2 requests in the Theodore Roosevelt Greater Elkhorn Ranchlands; and
- 17 requests in the Fort Buford State Historic Site.

The implementation of NDIC Order 24665 in North Dakota is a form of mitigation. The state mandated reduction in flaring, in conjunction with site specific requirements on an APD or SN request to flare, would provide the protection needed to eliminate, minimize or mitigate impacts to a property's setting and feel in accordance to Section 106.

4.4.6.7 Cumulative Impacts to Native American Religious Concerns

Cultural resources associated with Native American ceremonies, religious practices, and important events in history have the highest probability of being of religious or of cultural concern to Native Americans. These cultural resources have been affected by past and current land uses such as agricultural development, transportation development, and mineral development throughout western North Dakota. Site specific mitigation measures for future APDs or requests to flare on new facilities would be identified during tribal consultation for each project, in conjunction with the implementation of NDIC Order 24665, would serve to eliminate, minimize, or mitigate impacts to cultural resources associated with Native American Religious Concerns.

4.4.6.8 Cumulative Impacts to Socio-Economic Conditions

The implementation of NDIC Order 24665 in North Dakota would curtail production if capture rates are not met by operators. Over time, this would result in a change of pace in oil and gas development and minimize or eliminate the need to flare on existing oil well locations. These changes can impact the royalties received from the development of federal minerals or from vented or flared oil well gas.

The analysis area for cumulative impacts includes numerous additional counties with current wells. Three of these additional counties-Benson, Rolette and Sioux counties, meet the criteria for low-income environmental justice populations and for American Indian/Alaska Native environmental justice populations. Flaring on an existing location would not interfere with the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act (AIRFA) or EO 13007 and would not prevent tribes from visiting sacred sites or prevent possession of sacred objects. The NDFO would continue to invite interested parties to consult about historic properties' that are of religious and cultural significance to Native Americans.

5.0 CONSULTATION AND COORDINATION

5.1 Persons, Agencies, and Organizations Consulted

Public scoping for this project was conducted by posting the proposed action on the NDFO website - NEPA notification log. Therefore, scoping was initiated August 30, 2013, the date the EA was assigned a number and posted to the NEPA notification log.

To better understand the challenges facing natural gas development in the Williston Basin, the BLM attended an NDPC sponsored workshop with oil and gas industry representatives, natural gas midstream representatives, Chairman Fox of the Mandan, Hidatsa, and Arikara Three Affiliated Tribes and NDIC representatives. During the workshop, operators were individually consulted to clarify the details of their SN requests to flare from Federal and Indian wells.

The BLM consults with the State Historic Preservation Office (SHPO) and Native American Tribes under Section 106 of the National Historic Preservation Act (NHPA). On June 24, 2015, the NDFO sent formal consultation and determination letters to the State Historic Preservation Officer (SHPO) of North Dakota. On July 8, 2015, the SHPO concurred with the NDFO's finding of "No Historic Properties Affected" (ND SHPO Ref: 15-0835).

On June 29, 2015, the NDFO invited seventeen federally recognized Indian tribes to consult about the NDFO's oil and gas program and the flaring of natural gas. The NDFO sent letters with maps inviting 17 Tribal Historical Preservation Officers (THPOs) or the respective cultural contacts to submit issues and concerns BLM should consider in the environmental analysis. The following were invited: Flandreau Santee Sioux Tribe, Fort Belknap Indian Community, Crow Tribe, Oglala Sioux Tribe, Mandan, Hidatsa, and Arikara Nation, Sisseton-Wahpeton Oyate Tribes, Rosebud Sioux Tribe, Lower Sioux Indian Community, Lower Brule Sioux Tribe, Yankton Sioux Tribe, Spirt Lake Tribe, Turtle Mountain Band of Chippewa, Cheyenne River Sioux Tribe, Northern Cheyenne Tribe, Standing Rock Sioux Tribe, Fort Peck Assiniboine and Sioux Tribes, and the Crow Creek Sioux Tribe. To date, the Fort Belknap Indian Community has requested to be consulted on future NDFO APDs.

5.2 Summary of Public Participation

5.2.1 Scoping

Public scoping for this project was conducted by posting the proposed action on the NDFO website - NEPA notification log. Therefore, scoping was initiated August 30, 2013, the date the EA was assigned a number, DOI-BLM-MT-C030-2013-229-EA, and posted to the NEPA notification log. No comments were received from the public.

5.2.2 30-Day Public Comment Period

Three SDRs were submitted on the Decision Record signed on August 25, 2015 (DOI-BLM-MT-C030-2013-229-EA). Based on the decision letter from the SDRs, modifications were made throughout this EA (DOI-BLM-MT-C030-2016-0212-EA) to clarify the proposed action and decision to be made by the BLM. In addition to the modifications, the NDFO posted this EA, DOI-BLM-MT-C030-2016-0212-EA, for a 30-day public comment period and notified

interested parties of its posting on the BLM e-Planning website. A two week extension was granted to the public until July 14, 2016.

A total of three written comment submissions were received during the comment period, which resulted in 28 substantive comments addressing various resources and concerns in the EA. After review and consideration of the comments, some modifications were made to the EA. A summary of the 30-day comments and changes made to the EA as a result of the comment period can be found in Appendix E of this EA.

Table 5.1. List of Preparers

Name	Title	Responsible for the Following Section(s)
Susan Bassett	Air Resource Specialist	Air Resources, Climate Change
Melissa Hovey	Air Resource Specialist	Air Resources, Climate Change
Jessica Montag	Economist	Socio-Economic Conditions
Irma Nansel	Planning and Envir. Coor.	Project Lead
Margaret Ward	NEPA Coordinator	NEPA
Ruth Miller	Land Use Specialist	NEPA
Dale Manchester	Petroleum Engineer	Fluid Minerals, RFD
Barney Whiteman	Petroleum Engineer	Fluid Minerals, RFD
Beth Poindexter	Petroleum Engineer	Fluid Minerals
Paul Kelley	Natural Resource Specialist	Visual Resources
Sean Berry	Archaeologist	Cultural Resources, Native American Religious Concerns

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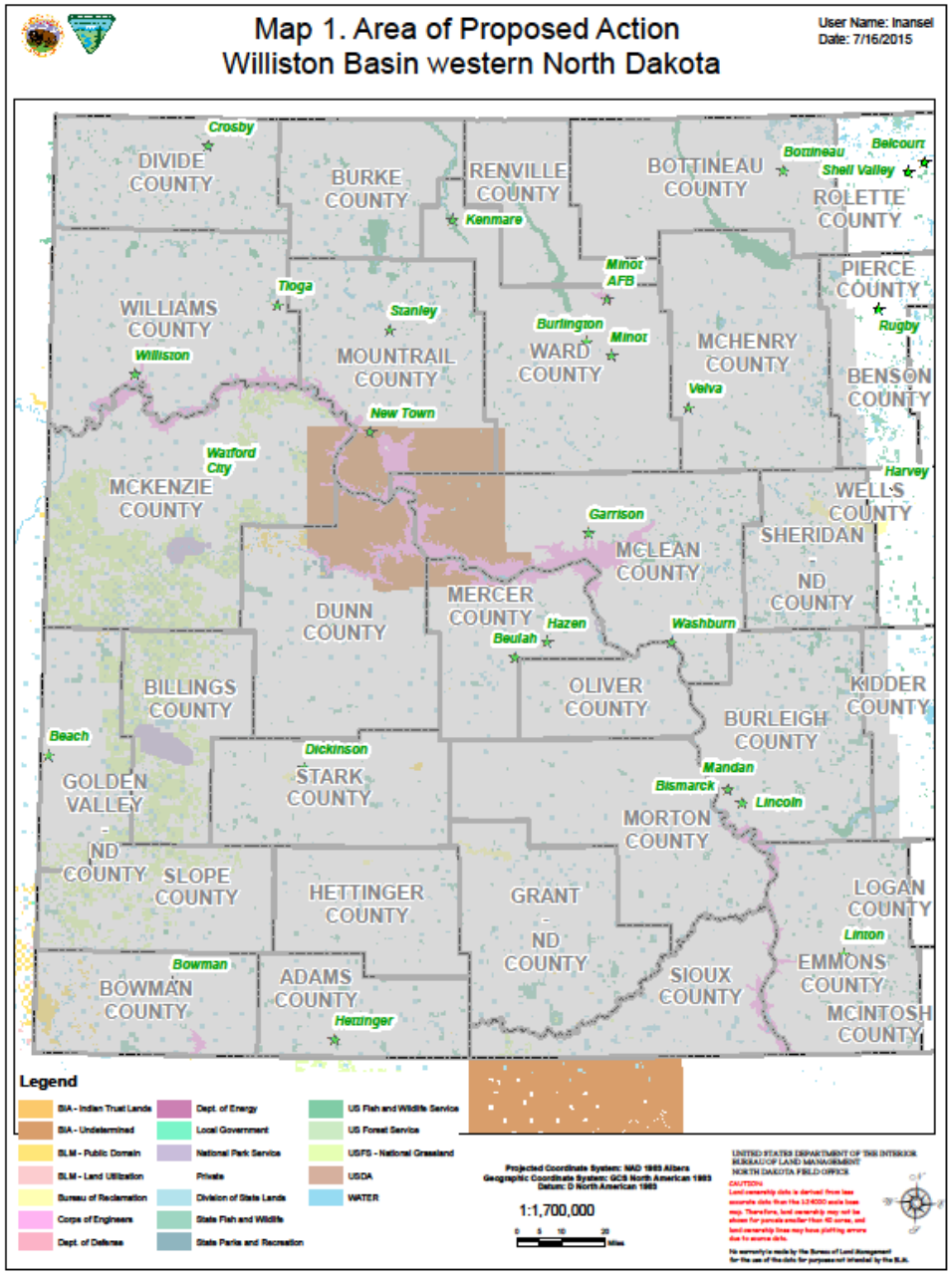
Map 1. Area of Proposed Action Williston Basin Western North Dakota



Appendix A. Sundry Notices in the NDFO from January 1, 2012 to April 16, 2015[1]. (BLM AFMSS database, accessed April 16, 2015)

	WELL ID	COUNTY			WELL ID	COUNTY
1	0904ERH NERU	BILLINGS		47	21-36TFH TEDDY	BILLINGS
2	1 MORGAN DRAW F	BILLINGS		48	24-24TFH DRS FE	BILLINGS
3	10-1 FEDERAL	BILLINGS		49	24X-12H TRMU	BILLINGS
4	1-10 T.R.FEDERA	BILLINGS		50	24X-12H TRMU	BILLINGS
5	11-10 CITIES SE	BILLINGS		51	2901H NERU	BILLINGS
6	11-14PH PRONGHO	BILLINGS		52	3 MORGAN DRAW B	BILLINGS
7	11-15PH PRONGHO	BILLINGS		53	3006 BSMU	BILLINGS
8	11-17TFH ANDERS	BILLINGS		54	3108 BSMU	BILLINGS
9	11-17TFH ANDERS	BILLINGS		55	31-10TFH DEMORE	BILLINGS
10	11-19-1PH KJELS	BILLINGS		56	31-16H BUCKHORN	BILLINGS
11	11-19-1PH KJELS	BILLINGS		57	3-11F US	BILLINGS
12	11-20TFH TEDDY	BILLINGS		58	31-28PH REDMOND	BILLINGS
13	11-25PH DRS FED	BILLINGS		59	31-3PH MCDONALD	BILLINGS
14	11-27PH TALKING	BILLINGS		60	31-3PH MCDONALD	BILLINGS
15	11-28PH REDMOND	BILLINGS		61	3204 BSMU	BILLINGS
16	11-5PH BABECK F	BILLINGS		62	34-10PH PRONGHO	BILLINGS
17	11-7TFH ELLISON	BILLINGS		63	34-11PH DULETSK	BILLINGS
18	11-8TFH KORDON	BILLINGS		64	34-11TFH PRONGH	BILLINGS
19	11-8TFH KORDON	BILLINGS		65	34-12TFH SMITH	BILLINGS
20	12-12H TRMU	BILLINGS		66	34-31H FEDERAL	BILLINGS
21	12-12TFH SCHNEI	BILLINGS		67	34-35-1H BASARA	BILLINGS
22	1-22 VOODOO	BILLINGS		68	34-9PH PRONGHOR	BILLINGS
23	14-10PH PRONGHO	BILLINGS		69	34-9TFH CLEMENS	BILLINGS
24	14-11PH DULETSK	BILLINGS		70	41-14H BUCKHORN	BILLINGS
25	14-11PH PRONGHO	BILLINGS		71	41-15PH PRONGHO	BILLINGS
26	14-12PH DULETSK	BILLINGS		72	41-16PH PRONGHO	BILLINGS
27	14-14H TRMU	BILLINGS		73	41-18D FEDERAL	BILLINGS
28	14-22H MOSSER	BILLINGS		74	41-18D FEDERAL	BILLINGS
29	1707 BSMU	BILLINGS		75	41-22H TRMU	BILLINGS
30	1806 BSMU	BILLINGS		76	41-22H TRMU	BILLINGS
31	1807 BSMU	BILLINGS		77	41-27PH TALKING	BILLINGS
32	1910 BSMU	BILLINGS		78	41-30H FEDERAL	BILLINGS
33	2 BUCKHORN FED	BILLINGS		79	42-18H FEDERAL	BILLINGS
34	2 MORGAN DR FED	BILLINGS		80	44-10PH PRONGHO	BILLINGS
35	21-13TFH PRONGH	BILLINGS		81	44-11PH DULETSK	BILLINGS
36	21-14 CL PH PRO	BILLINGS		82	44-11PH DULETSK	BILLINGS
37	21-14H TR MADIS	BILLINGS		83	44-11PH PRONGHO	BILLINGS
38	21-14TFH PRONGH	BILLINGS		84	44-18TFH ASH CO	BILLINGS
39	21-15PH PRONGHO	BILLINGS		85	44-18TFH ASH CO	BILLINGS
40	21-16TFH PRONGH	BILLINGS		86	44-20TFH DRY CR	BILLINGS
41	21-1TFH WANNER	BILLINGS		87	44-28H KUKOWSKI	BILLINGS
42	2-12 US	BILLINGS		88	44-32TFH TEDDY	BILLINGS
43	21-24TFH TEDDY	BILLINGS		89	44-9PH PRONGHOR	BILLINGS
44	21-26TFH TALKIN	BILLINGS		90	7 ELKHORN FED A	BILLINGS
45	21-27PH TALKING	BILLINGS		91	44-32SH DAVIS	BOWMAN
46	21-28TFH REDMON	BILLINGS		92	21-3427H KANDIY	BURKE

	WELL ID	COUNTY			WELL ID	COUNTY
93	03-16H HORSE CA	DUNN		139	11-2MBH CCU OLY	DUNN
94	04B-03HTF SERGE	DUNN		140	11-2TFH CCU OLY	DUNN
95	05AH NEEDLE (MW	DUNN		141	11-4H BEARS GHO	DUNN
96	05CH TF GRAY WO	DUNN		142	11-4TFH BEARS G	DUNN
97	06B-05-4H TF HU	DUNN		143	1-19-18H 1 HALL	DUNN
98	102-16H HORSE C	DUNN		144	1-19-18H 1 HALL	DUNN
99	1-03-02H-149-92	DUNN		145	11X-10 FBIR SMI	DUNN
100	1-03-34H-150-92	DUNN		146	11X-10A FBIR SM	DUNN
101	1-03-35H-150-92	DUNN		147	11X-10E FBIR SM	DUNN
102	1-04-03H-149-91	DUNN		148	11X-10F FBIR SM	DUNN
103	1-04-33H-150-92	DUNN		149	11X-11 TUCKERMA	DUNN
104	1-04-33H-150-92	DUNN		150	11X-11A TUCKERM	DUNN
105	1-05-08H-147-92	DUNN		151	11X-11B TUCKERM	DUNN
106	1-05H SOWARD	DUNN		152	11X-11F TUCKERM	DUNN
107	1-06-01H-149-92	DUNN		153	11X-20 FENTON F	DUNN
108	1-06-05H-149-92	DUNN		154	11X-20 JANE FE	DUNN
109	1-06-07H-147-92	DUNN		155	11X-20 ROBERT F	DUNN
110	1-06-31H-150-92	DUNN		156	11X-20 THELMA F	DUNN
111	1-06-32H-150-92	DUNN		157	11X-28B THORP F	DUNN
112	1-10-11H-149-91	DUNN		158	11X-28B THORP F	DUNN
113	1-10-15H-149-91	DUNN		159	11X-28F THORP F	DUNN
114	11-15H BOY CHIE	DUNN		160	11X-28F THORP F	DUNN
115	11-15TFH BOY CH	DUNN		161	12-10-11-9H SKU	DUNN
116	11-18H GEORGE T	DUNN		162	12-10-11-9H SKU	DUNN
117	11-18H GEORGE T	DUNN		163	12-10-11-9H3 SK	DUNN
118	1-12H BLACK HAW	DUNN		164	12-10-11-9H3 SK	DUNN
119	1-12H BLACK HAW	DUNN		165	1-22-10H CHARGI	DUNN
120	1-12H BLACK HAW	DUNN		166	1-22-10H CHARGI	DUNN
121	11-2H PORCUPINE	DUNN		167	1-22-23H CHARGI	DUNN
122	1-12H SKUNK CRE	DUNN		168	1-22-23H CHARGI	DUNN
123	1-12H SKUNK CRE	DUNN		169	1-22H WILD TURK	DUNN
124	1-12HA BLACK HA	DUNN		170	12-7-8-8H SKUNK	DUNN
125	1-12HA BLACK HA	DUNN		171	12-7-8-8H SKUNK	DUNN
126	1-12HA BLACK HA	DUNN		172	12-7-8-9H SKUNK	DUNN
127	1-12HB BLACK HA	DUNN		173	12-7-8-9H SKUNK	DUNN
128	1-12HB BLACK HA	DUNN		174	12-7-8-9H3 SKUN	DUNN
129	1-12HB BLACK HA	DUNN		175	12-7-8-9H3 SKUN	DUNN
130	1-12HD BLACK HA	DUNN		176	12X-19 ALWIN FE	DUNN
131	1-12HD BLACK HA	DUNN		177	12X-19 ELAINE F	DUNN
132	1-12HW BLACK HA	DUNN		178	12X-5 TEDDY FED	DUNN
133	1-12HW BLACK HA	DUNN		179	1-30H HARRIS FE	DUNN
134	1-12HW BLACK HA	DUNN		180	1-31-30H-150-91	DUNN
135	1-12HY BLACK HA	DUNN		181	1-31-36H-150-92	DUNN
136	1-12HY BLACK HA	DUNN		182	13-18-17-16H3 S	DUNN
137	1-12HZ BLACK HA	DUNN		183	13-18-17-16H3 S	DUNN
138	1-12HZ BLACK HA	DUNN		184	13-18-17-9H SKU	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
185	13-18-17-9H SKU	DUNN		231	14-21-4H TWO SH	DUNN
186	1-32-29H-150-91	DUNN		232	14-21-4H TWO SH	DUNN
187	1-32-33H-148-92	DUNN		233	14-23HA MABEL L	DUNN
188	13-34-28-1H MOC	DUNN		234	14-23HB MABEL L	DUNN
189	13-34-28-1H MOC	DUNN		235	14-23HX MABEL L	DUNN
190	13-34-28-2H MOC	DUNN		236	142-94 (DWOA) F	DUNN
191	13-34-28-2H MOC	DUNN		237	142-94 (DWOA) F	DUNN
192	13-34-3H MOCCAS	DUNN		238	142-94 (DWOA) F	DUNN
193	13-34-3H MOCCAS	DUNN		239	14-2H TAT	DUNN
194	1-36HC BUFFALO	DUNN		240	14-2H TAT	DUNN
195	1-36HC BUFFALO	DUNN		241	14-31TFH GORHMA	DUNN
196	1-36HD CORRAL	DUNN		242	14-33-28H TWO S	DUNN
197	1-36HD CORRAL	DUNN		243	14-33-28H TWO S	DUNN
198	13X-13B FBIR NE	DUNN		244	14-33-6H TWO SH	DUNN
199	13X-13B FBIR NE	DUNN		245	14-33-6H TWO SH	DUNN
200	13X-5A NYGAARD	DUNN		246	146-97-3328H-1	DUNN
201	14-10H LUCILLE	DUNN		247	147-93-18B-19H	DUNN
202	14-10H SHERALEE	DUNN		248	147-93-18B-19H	DUNN
203	14-10H SHERALEE	DUNN		249	14-8H FOX	DUNN
204	14-11-2-3H MOCC	DUNN		250	14-8H FOX	DUNN
205	14-11-2-3H MOCC	DUNN		251	149-93-33C-28H	DUNN
206	14-11-2-3H3 MOC	DUNN		252	14C-13H TF PUMP	DUNN
207	14-11-2-3H3 MOC	DUNN		253	14C-13H TOBACCO	DUNN
208	14-11H T.KUPPER	DUNN		254	14HC ETHAN HALL	DUNN
209	14-11H T.KUPPER	DUNN		255	14HC ETHAN HALL	DUNN
210	14-12TFH DEEP C	DUNN		256	14X-10 STROMME	DUNN
211	14-14-10-2H CHA	DUNN		257	14X-10A STROMME	DUNN
212	14-14-10-2H CHA	DUNN		258	14X-36F TAT STA	DUNN
213	14-14-10-2H3 CH	DUNN		259	15-14-11-4H CHA	DUNN
214	14-14-10-2H3 CH	DUNN		260	15-14-11-4H CHA	DUNN
215	14-14-10-3H3 CH	DUNN		261	15-14-24-16H CH	DUNN
216	14-14-10-3H3 CH	DUNN		262	15-14-24-16H CH	DUNN
217	14-14-24-16H3 C	DUNN		263	15-1H TAT	DUNN
218	14-14-24-16H3 C	DUNN		264	15-1H TAT	DUNN
219	14-16H BIRDSBIL	DUNN		265	15-21-16-2H CHA	DUNN
220	14-16H BIRDSBIL	DUNN		266	15-21-16-2H CHA	DUNN
221	14-17H CLARA	DUNN		267	15-21-16-2H3 CH	DUNN
222	14-17H CLARA	DUNN		268	15-21-16-2H3 CH	DUNN
223	14-20H ROHDE US	DUNN		269	15-21-16-3H3 CH	DUNN
224	14-20H ROHDE US	DUNN		270	15-21-16-3H3 CH	DUNN
225	14-21-16-2HS TW	DUNN		271	15-22-15-3H3 CH	DUNN
226	14-21-16-2HS TW	DUNN		272	15-22-15-3H3 CH	DUNN
227	14-21-33-15H TW	DUNN		273	15-22-15-3H3 CH	DUNN
228	14-21-33-15H TW	DUNN		274	15-22-15-4H CHA	DUNN
229	14-21-33-16H3 T	DUNN		275	15-22-15-4H CHA	DUNN
230	14-21-33-16H3 T	DUNN		276	15-22-15-4H CHA	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
277	15-2H HOPKINS U	DUNN		323	18B-19H TF PYGM	DUNN
278	15-32H PACKINEA	DUNN		324	18B-19H TF PYGM	DUNN
279	15-32H PACKINEA	DUNN		325	18C-07-1H DUET	DUNN
280	15-34H BLACK HA	DUNN		326	18C-07-1H DUET	DUNN
281	15-34H BLACK HA	DUNN		327	18C-07-2H TF HA	DUNN
282	15D-16H CATFISH	DUNN		328	18C-07-2H TF HA	DUNN
283	15D-16H TF BULL	DUNN		329	18D-07-3H CHORD	DUNN
284	15HC WOUNDED FA	DUNN		330	18D-07-3H CHORD	DUNN
285	15HC WOUNDED FA	DUNN		331	18D-07-4H TF MU	DUNN
286	16-10-3-3H MOCC	DUNN		332	18D-07-4H TF MU	DUNN
287	16-10-3-3H MOCC	DUNN		333	18D-07-4H TF MU	DUNN
288	16-10-3-3H3 MOC	DUNN		334	19-18HB ALFRED	DUNN
289	16-10-3-3H3 MOC	DUNN		335	19-18HC ALFRED	DUNN
290	16-15-16H TALL	DUNN		336	19-18HD ALFRED	DUNN
291	16-1H LINCOLN U	DUNN		337	19-18HW MAGGIE	DUNN
292	16-21-16-1H CHA	DUNN		338	19-18HW MAGGIE	DUNN
293	16-21-16-1H CHA	DUNN		339	19-18HW MAGGIE	DUNN
294	16-21-16-1H3 CH	DUNN		340	19-18HY ALFRED	DUNN
295	16-21-16-1H3 CH	DUNN		341	19-18HZ ALFRED	DUNN
296	16-21-16-1HA CH	DUNN		342	19C-18H KNUCKLE	DUNN
297	16-21-16-1HA CH	DUNN		343	19C-18H KNUCKLE	DUNN
298	16-2-3-13H SKUN	DUNN		344	1A-12-1H FORT B	DUNN
299	16-2-3-13H SKUN	DUNN		345	1A-12-2H FORT B	DUNN
300	16-2-3-13H3 SKU	DUNN		346	20-17HA MARTIN	DUNN
301	16-2-3-13H3 SKU	DUNN		347	20-17HB MARTIN	DUNN
302	16-26-27-12H MO	DUNN		348	20-17HC MARTIN	DUNN
303	16-26-27-12H MO	DUNN		349	20-17HD MARTIN	DUNN
304	16-26-27-13H3 M	DUNN		350	20-17HF MARTIN	DUNN
305	16-26-27-13H3 M	DUNN		351	20-17HW MARTIN	DUNN
306	16-3-11H MOCCAS	DUNN		352	20-17HX MARTIN	DUNN
307	16-3-11H MOCCAS	DUNN		353	20-17HZ MARTIN	DUNN
308	16-34-2H MOCCAS	DUNN		354	20-24H BIRON	DUNN
309	16-34-2H MOCCAS	DUNN		355	20-24H BIRON	DUNN
310	16-34H MOCCASIN	DUNN		356	2-03-02H-149-92	DUNN
311	16-34H MOCCASIN	DUNN		357	2-03-35H-150-92	DUNN
312	16-3H MOCCASIN	DUNN		358	20-34H BAKER	DUNN
313	16-3H MOCCASIN	DUNN		359	20-34H BAKER	DUNN
314	16-44H BURR	DUNN		360	2-04-03H-149-91	DUNN
315	16-8-16H TWO SH	DUNN		361	2-04-33H-150-92	DUNN
316	16-8-16H TWO SH	DUNN		362	2-04-33H-150-92	DUNN
317	16-8-7H TWO SHI	DUNN		363	2-05-04H-148-91	DUNN
318	16-8-7H TWO SHI	DUNN		364	2-06-01H-149-92	DUNN
319	16-9H ALISIA FO	DUNN		365	2-06-05H-149-92	DUNN
320	16-9H ALISIA FO	DUNN		366	2-06-07H-147-92	DUNN
321	17D-08-1H FORT	DUNN		367	2-06-31H-150-92	DUNN
322	17D-08-2H FORT	DUNN		368	2-06-32H-150-92	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
369	20C-21-4H FORT	DUNN		415	22D-15-1H FORT	DUNN
370	20C-21-5H FORT	DUNN		416	2-31-25H-150-92	DUNN
371	20C-21-6H FORT	DUNN		417	23-14HC SKUNK C	DUNN
372	2-10-11H-149-91	DUNN		418	23-14HC SKUNK C	DUNN
373	21-14H GOOD BEA	DUNN		419	2-31H LIKES EAG	DUNN
374	21-15H CHASE US	DUNN		420	2-32-29H-143-96	DUNN
375	21-15TFH TWO CR	DUNN		421	2-32-29H-150-91	DUNN
376	21-2TFH CCU OLY	DUNN		422	2-32-33H-148-92	DUNN
377	21-30MBH CCU PR	DUNN		423	23-36H GARY BEL	DUNN
378	21-4H GERALD TU	DUNN		424	23-36H GARY BEL	DUNN
379	21-4H GERALD TU	DUNN		425	2-35HC INDEPEND	DUNN
380	21-4H RICHANDA	DUNN		426	2-35HC INDEPEND	DUNN
381	21-4TFH BEARS G	DUNN		427	2-35HD INDEPEND	DUNN
382	21-6H CASEY KUK	DUNN		428	2-35HI INDEPEND	DUNN
383	21-6H CASEY KUK	DUNN		429	2-35HY INDEPEND	DUNN
384	2-19H JOSEPH EA	DUNN		430	2-35HZ INDEPEND	DUNN
385	2-19H JOSEPH EA	DUNN		431	23A-1H HAWAII 1	DUNN
386	21A-20-1H FORT	DUNN		432	23A-4H TF MAUI	DUNN
387	21A-20-2H FORT	DUNN		433	23B-2H TF HILO	DUNN
388	21A-20-3H FORT	DUNN		434	23B-3H KONA 148	DUNN
389	21A-22H CHOKECH	DUNN		435	24-31MBH GORHMA	DUNN
390	21C-22H TF BLUE	DUNN		436	24-7H DAVID BEC	DUNN
391	21C-22H WORMWOO	DUNN		437	24-7H DAVID BEC	DUNN
392	2-1H TAT	DUNN		438	24X-13F BRANDVI	DUNN
393	2-1H TAT	DUNN		439	24X-21B FBIR BL	DUNN
394	21X-10 FBIR IRO	DUNN		440	24X-21B FBIR BL	DUNN
395	21X-10 FBIR YEL	DUNN		441	24X-26B FBIR LA	DUNN
396	21X-19B GEORGE	DUNN		442	24X-27A FBIR GU	DUNN
397	21X-19F BANG FE	DUNN		443	24X-27A FBIR GU	DUNN
398	21X-33A MARTIN	DUNN		444	24X-27B FBIR GU	DUNN
399	21X-33B MARTIN	DUNN		445	24X-27B FBIR GU	DUNN
400	21X-33E MARTIN	DUNN		446	24X-27ER FBIR G	DUNN
401	21X-33F MARTIN	DUNN		447	24X-27F FBIR GU	DUNN
402	21X-6B FBIR GEO	DUNN		448	24X-36 CARUS FE	DUNN
403	2215H-1 MC-HEIN	DUNN		449	24X-6 CAROL FED	DUNN
404	22-27HC SARAH Y	DUNN		450	24X-6 LOIS FED	DUNN
405	22-27HC SARAH Y	DUNN		451	24X-8A FBIR BEA	DUNN
406	2-24-12-1H3 TWO	DUNN		452	24X-8B FBIR BEA	DUNN
407	2-24-12-1H3 TWO	DUNN		453	24X-8B FBIR HUN	DUNN
408	2-24-12-2H TWO	DUNN		454	24X-8E FBIR BEA	DUNN
409	2-24-12-2H TWO	DUNN		455	24X-8E FBIR HUN	DUNN
410	2-24-25-15H SKU	DUNN		456	25A-36-1H FORT	DUNN
411	2-24-25-15H SKU	DUNN		457	27A-34-1H FORT	DUNN
412	2-24-25-16H SKU	DUNN		458	27A-34-2H FORT	DUNN
413	2-24-25-16H SKU	DUNN		459	27A-34-3H FORT	DUNN
414	22A-27-2H FORT	DUNN		460	2-8-17-14H3 SKU	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
461	2-8-17-14H3 SKU	DUNN		507	31-30HA CHARLES	DUNN
462	2-8-17-15H SKUN	DUNN		508	31-30HA CHARLES	DUNN
463	2-8-17-15H SKUN	DUNN		509	31-30HB CHARLES	DUNN
464	28-33HC HOWLING	DUNN		510	31-30HB CHARLES	DUNN
465	28-33HC HOWLING	DUNN		511	31-30HX CHARLES	DUNN
466	28A-33-1H FORT	DUNN		512	31-30HX CHARLES	DUNN
467	28A-33-2H FORT	DUNN		513	31-4H BEARS GHO	DUNN
468	28HC NORTH JOHN	DUNN		514	31-4H BEARS GHO	DUNN
469	28HC NORTH JOHN	DUNN		515	31-4H JUDY TUHY	DUNN
470	28HC NORTH JOHN	DUNN		516	31-4TFH BEARS G	DUNN
471	29-31H BAKER	DUNN		517	31-4TFH BEARS G	DUNN
472	29-31H BAKER	DUNN		518	3-18H NATHAN HA	DUNN
473	29-31H BAKER	DUNN		519	3-18H NATHAN HA	DUNN
474	29A-32-3H FORT	DUNN		520	3-1H OLSON (DWO	DUNN
475	29A-32-4H FORT	DUNN		521	31X-11C FBIR GO	DUNN
476	29A-32-5H FORT	DUNN		522	31X-12C FBIR WA	DUNN
477	29B-32-1H FORT	DUNN		523	31X-12D FBIR WA	DUNN
478	29B-32-2H FORT	DUNN		524	31X-12G FBIR WA	DUNN
479	29B-32H ARABIAN	DUNN		525	31X-12H FBIR WA	DUNN
480	3-03-02H-149-92	DUNN		526	31X-19 ERNEST F	DUNN
481	30-31H MANDAREE	DUNN		527	31X-19 FBIR BIR	DUNN
482	30-31HA MANDARE	DUNN		528	31X-19 FBIR STE	DUNN
483	30-31HC ALFRED	DUNN		529	31X-19D FBIR BI	DUNN
484	30-31HD ALFRED	DUNN		530	31X-19D FBIR ST	DUNN
485	30-31HW MANDARE	DUNN		531	31X-19G FBIR BI	DUNN
486	30-31HY ALFRED	DUNN		532	31X-19G FBIR ST	DUNN
487	30-31HZ ALFRED	DUNN		533	31X-19H FBIR BI	DUNN
488	3-03-34H-150-92	DUNN		534	31X-19H FBIR ST	DUNN
489	3-03-35H-150-92	DUNN		535	31X-2 FBIR HUNT	DUNN
490	3-04-03H-149-91	DUNN		536	31X-33H MARTIN	DUNN
491	3-04-33H-150-92	DUNN		537	31X-9A FBIR YOU	DUNN
492	3-04-33H-150-92	DUNN		538	31X-9B FBIR YOU	DUNN
493	3-05-08H-147-92	DUNN		539	31X-9E FBIR YOU	DUNN
494	3-06-01H-149-92	DUNN		540	31X-9F FBIR YOU	DUNN
495	3-06-07H-147-92	DUNN		541	32-29H WELLS	DUNN
496	3-06-31H-150-92	DUNN		542	32-29H WELLS	DUNN
497	3-06-32H-150-92	DUNN		543	32-34H VOIGHT	DUNN
498	30B-31H NET 149	DUNN		544	3-24-12-3H3 TWO	DUNN
499	30B-31H NET 149	DUNN		545	3-24-12-3H3 TWO	DUNN
500	3-10-11H-149-91	DUNN		546	3-24-12-4H TWO	DUNN
501	3-10-15H-149-9	DUNN		547	3-24-12-4H TWO	DUNN
502	31-14H GOOD BEA	DUNN		548	3-24-25-13H SKU	DUNN
503	31-15H AZURE US	DUNN		549	3-24-25-13H SKU	DUNN
504	31-15TFH SWIFT	DUNN		550	3-24-25-14H3 SK	DUNN
505	31-18H IRENE KO	DUNN		551	3-24-25-14H3 SK	DUNN
506	31-18H IRENE KO	DUNN		552	3-31-25H-150-92	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
553	33-12H ELK CREE	DUNN		599	35HD PAUL PETER	DUNN
554	3-31-30H-150-91	DUNN		600	36-25HA GOOD BI	DUNN
555	3-31-36H-150-92	DUNN		601	36-25HA GOOD BI	DUNN
556	3-32-29H-150-91	DUNN		602	36-25HB GOOD BI	DUNN
557	3-32-33H-148-92	DUNN		603	36-25HB GOOD BI	DUNN
558	33-34H HELENA R	DUNN		604	36-25HC GOOD BI	DUNN
559	33-34H HELENA R	DUNN		605	36-25HC GOOD BI	DUNN
560	33C-28H TF CALY	DUNN		606	36-25HD GOOD BI	DUNN
561	33D-28-4H FORT	DUNN		607	36-25HW GOOD BI	DUNN
562	33D-28-5H FORT	DUNN		608	36-25HW GOOD BI	DUNN
563	34-11H T KUPPER	DUNN		609	36-25HX GOOD BI	DUNN
564	34-11H T KUPPER	DUNN		610	36-25HZ GOOD BI	DUNN
565	34-1H HAY DRAW	DUNN		611	36-35H BEAKS	DUNN
566	34-27H WICKER	DUNN		612	36-35H BEAKS	DUNN
567	34-27H WICKER	DUNN		613	36C-25-4H FORT	DUNN
568	34-7H DAVID BEC	DUNN		614	36D-25-2H FORT	DUNN
569	34-7H DAVID BEC	DUNN		615	3-9H BENSON	DUNN
570	34-7H KNUDSVIG	DUNN		616	3-9H BENSON	DUNN
571	34-7H KNUDSVIG	DUNN		617	3-9HA BENSON	DUNN
572	34-7H ROEHR USA	DUNN		618	3-9HA BENSON	DUNN
573	34-7H ROEHR USA	DUNN		619	3A-10-1H FORT B	DUNN
574	34X-14 FBIR DAR	DUNN		620	3A-10-2H FORT B	DUNN
575	34X-14D FBIR DA	DUNN		621	4-03-02H-149-92	DUNN
576	34X-14H FBIR DA	DUNN		622	4-03-35H-150-92	DUNN
577	34X-25 FBIR WAL	DUNN		623	4-04-03H-149-91	DUNN
578	34X-25 FBIR WAL	DUNN		624	4-04-33H-150-92	DUNN
579	34X-25A FBIR BA	DUNN		625	4-04-33H-150-92	DUNN
580	34X-25E FBIR BA	DUNN		626	4-05-04H-148-91	DUNN
581	34X-25F FBIR BA	DUNN		627	4-06-01H-149-92	DUNN
582	34X-28C ESTHER	DUNN		628	4-06-07H-147-92	DUNN
583	34X-28G ESTHER	DUNN		629	4-06-31H-150-92	DUNN
584	34X-33C FBIR GR	DUNN		630	4-06-32H-150-92	DUNN
585	34X-35 BOOMER	DUNN		631	4-10-11H-149-91	DUNN
586	34X-35D BOOMER	DUNN		632	4-11H WOMAN CRE	DUNN
587	34X-35G BOOMER	DUNN		633	4-11H WOMAN CRE	DUNN
588	34X-35H BOOMER	DUNN		634	4-11H WOMAN CRE	DUNN
589	34X-7 CLARENCE	DUNN		635	41-2H HUBER USA	DUNN
590	34X-7B CLARENCE	DUNN		636	41-2H HUBER USA	DUNN
591	34X-7C CLARENCE	DUNN		637	41-4H LBM TUHY	DUNN
592	34X-7D CLARENCE	DUNN		638	41-5H EAGLE USA	DUNN
593	34X-7H CLARENCE	DUNN		639	4-15H PATRICIA	DUNN
594	35HA PAUL PETER	DUNN		640	4-15H PATRICIA	DUNN
595	35HA PAUL PETER	DUNN		641	41-6H 2 IVAN HE	DUNN
596	35HC PAUL PETER	DUNN		642	41-6H 2 IVAN HE	DUNN
597	35HC PAUL PETER	DUNN		643	41X-16 BIG GULC	DUNN
598	35HD PAUL PETER	DUNN		644	41X-16 DAKOTA F	DUNN

	WELL ID	COUNTY			WELL ID	COUNTY
645	41X-1C FBIR GRI	DUNN		691	5-04-33H-150-92	DUNN
646	41X-28 SCHETTLE	DUNN		692	5-06-05H-149-92	DUNN
647	41X-28 SCHETTLE	DUNN		693	5-06-07H-147-92	DUNN
648	41X-29 INGA FED	DUNN		694	5-11H FREDERICK	DUNN
649	41X-29C INGA FE	DUNN		695	5-24H BUFFALO R	DUNN
650	41X-29D INGA FE	DUNN		696	5-31-25H-150-92	DUNN
651	41X-29H INGA FE	DUNN		697	5-7-8-1H TWO SH	DUNN
652	41X-6 WILLIAM	DUNN		698	5-7-8-1H TWO SH	DUNN
653	41X-6C WILLIAM	DUNN		699	5-7-8-1H3 TWO S	DUNN
654	41X-6H WILLIAM	DUNN		700	5-7-8-1H3 TWO S	DUNN
655	42-35H CHARGING	DUNN		701	6-04-33H-150-92	DUNN
656	42-35H CHARGING	DUNN		702	6-04-33H-150-92	DUNN
657	4-31-25H-150-92	DUNN		703	6-06-07H-147-92	DUNN
658	4-31H LOOK OUT	DUNN		704	6-31-1TH BICE	DUNN
659	4-32-29H-150-91	DUNN		705	6-31H FREDERICK	DUNN
660	4-32-33H-148-92	DUNN		706	6-7HC FETTIG (M	DUNN
661	43-26H FREDERIC	DUNN		707	6-7HC FETTIG (M	DUNN
662	4-3-34-3H3 MOCC	DUNN		708	7-04-33H-150-92	DUNN
663	4-3-34-4H MOCCA	DUNN		709	7-04-33H-150-92	DUNN
664	4-3-34-4H MOCCA	DUNN		710	7-06-07H-147-92	DUNN
665	43X-4 JORGENSON	DUNN		711	7-31-25H-150-92	DUNN
666	43X-4 KAYE	DUNN		712	8-04-33H-150-92	DUNN
667	43X-4B KAYE FED	DUNN		713	8-04-33H-150-92	DUNN
668	43X-4E KAYE FED	DUNN		714	8-06-07H-147-92	DUNN
669	43X-5 DEEP CREE	DUNN		715	9-1H POINT USA	DUNN
670	43X-5 JORGENSON	DUNN		716	9-1H POINT USA	DUNN
671	44-10H HANSEN R	DUNN		717	9-2-3-12HS SKUN	DUNN
672	44-10H HANSEN R	DUNN		718	9-2-3-12HS SKUN	DUNN
673	44-10H TYSVER F	DUNN		719	9-2-3-5H SKUNK	DUNN
674	44-10H VIANI US	DUNN		720	9-2-3-5H SKUNK	DUNN
675	44-10TFH HANSEN	DUNN		721	9C-04-3H FORT B	DUNN
676	44-10TFH HANSEN	DUNN		722	9C-04-4H FORT B	DUNN
677	44-19H BOB TUHY	DUNN		723	9C-04-5H FORT B	DUNN
678	44-19H BOB TUHY	DUNN		724	9D-04-1H FORT B	DUNN
679	44-34H WERRE TR	DUNN		725	9D-04-2H FORT B	DUNN
680	44X-32C FBIR HE	DUNN		726	9HD EDWARD GOOD	DUNN
681	4-8-17-13H SKUN	DUNN		727	9HD EDWARD GOOD	DUNN
682	4-8-17-13H SKUN	DUNN		728	FAC HALLIDAY CT	DUNN
683	4-8-17-13H3 SKU	DUNN		729	11-13TFH DRY CR	GOLDEN VALLEY
684	4-8-17-13H3 SKU	DUNN		730	11-1TFH ELLISON	GOLDEN VALLEY
685	4-8-17-14H SKUN	DUNN		731	1-20-1A BOYCE F	GOLDEN VALLEY
686	4-8-17-14H3 SKU	DUNN		732	14-12H FEDERAL	GOLDEN VALLEY
687	4-8-17-14H3 SKU	DUNN		733	14-23H FEDERAL	GOLDEN VALLEY
688	4-9H HIGH HAWK	DUNN		734	14-24H FEDERAL	GOLDEN VALLEY
689	4-9H HIGH HAWK	DUNN		735	14-7H FEDERAL	GOLDEN VALLEY
690	5-04-33H-150-92	DUNN		736	21-1PH ELLISON	GOLDEN VALLEY

	WELL ID	COUNTY			WELL ID	COUNTY
737	21-1PH ELLISON	GOLDEN VALLEY		783	1-11H FLORIDA	MCKENZIE
738	32-4HBKCE FEDER	GOLDEN VALLEY		784	11-1H JOSEPH	MCKENZIE
739	41-16H STATE	GOLDEN VALLEY		785	11-27TFH MOSSER	MCKENZIE
740	41-19H BN	GOLDEN VALLEY		786	11-29H GOODALL	MCKENZIE
741	41-24H PETERSON	GOLDEN VALLEY		787	11-29H GOODALL	MCKENZIE
742	44-23TFH BELL L	GOLDEN VALLEY		788	11-29TFH ANNIE	MCKENZIE
743	44-23TFH BELL L	GOLDEN VALLEY		789	1-12H KINGMAN	MCKENZIE
744	44-33TFH BANNER	GOLDEN VALLEY		790	11-3H DANKS USA	MCKENZIE
745	44-33TFH BANNER	GOLDEN VALLEY		791	11-3H DANKS USA	MCKENZIE
746	03-04 1H YAUCH	MCKENZIE		792	1-13H OTT	MCKENZIE
747	03-0805H CLARKS	MCKENZIE		793	11-3H1 ROLLEFST	MCKENZIE
748	03A-10H EMERALD	MCKENZIE		794	11-4HR FLATLAND	MCKENZIE
749	04-20H BEAR DEN	MCKENZIE		795	11-4TFH FLATLAN	MCKENZIE
750	04A-09H PRAIRIE	MCKENZIE		796	1-15-16H BEAR B	MCKENZIE
751	04A-09H PRAIRIE	MCKENZIE		797	1-15-16H BEAR B	MCKENZIE
752	04A-09H TF BOBC	MCKENZIE		798	1-15-16H BEAR B	MCKENZIE
753	04A-09H TF BOBC	MCKENZIE		799	11-5SEH JOHNSON	MCKENZIE
754	05-31H BEAR DEN	MCKENZIE		800	1-17H ROBINSON	MCKENZIE
755	06A-18H COURAGE	MCKENZIE		801	1-18 ERRMU	MCKENZIE
756	06A-18H TF PRID	MCKENZIE		802	1-19-20H STOCKE	MCKENZIE
757	06B-18H TF HONO	MCKENZIE		803	1-19-20H STOCKE	MCKENZIE
758	07-17H BEAR DEN	MCKENZIE		804	1-19-20H STOCKE	MCKENZIE
759	08-1621H BEAR D	MCKENZIE		805	1-19-20H STOCKE	MCKENZIE
760	100-0805H CLARK	MCKENZIE		806	11B-2-2H USA	MCKENZIE
761	100-2017H BEAR	MCKENZIE		807	11B-2-2H USA	MCKENZIE
762	100-2413H WEST	MCKENZIE		808	11B-2-2H USA	MCKENZIE
763	100-2501H HAWKE	MCKENZIE		809	1-1H HODGES	MCKENZIE
764	100-2501H HAWKE	MCKENZIE		810	11X-14 MONDAK F	MCKENZIE
765	101-1819H CLARK	MCKENZIE		811	11X-34 HATTER	MCKENZIE
766	101-2019H BEAR	MCKENZIE		812	12-0719H CLARKS	MCKENZIE
767	101-2425H WEST	MCKENZIE		813	1-20H BUELINGO	MCKENZIE
768	102-1708H BEAR	MCKENZIE		814	1-20H MAYS	MCKENZIE
769	102-2413H WEST	MCKENZIE		815	1-2-11H BOWLINE	MCKENZIE
770	102-2501H HAWKE	MCKENZIE		816	1-2-11H BOWLINE	MCKENZIE
771	103-17H CLARKS	MCKENZIE		817	1-2-11H BOWLINE	MCKENZIE
772	103-21H BEAR DE	MCKENZIE		818	1-2-11H BOWLINE	MCKENZIE
773	103-21H BEAR DE	MCKENZIE		819	1-2-11H BOWLINE	MCKENZIE
774	10-3H2 ROLLEFST	MCKENZIE		820	12-12H BICENTEN	MCKENZIE
775	104-2116H BEAR	MCKENZIE		821	12-18H ANDERSON	MCKENZIE
776	104-2116H BEAR	MCKENZIE		822	12-18H ANDERSON	MCKENZIE
777	108-1708H BEAR	MCKENZIE		823	12-1H HUNTS ALO	MCKENZIE
778	10B-2-4H USA	MCKENZIE		824	12-1H HUNTS ALO	MCKENZIE
779	10B-2-4H USA	MCKENZIE		825	1-21H MANTLE	MCKENZIE
780	10B-2-4H USA	MCKENZIE		826	1-21H SAND CREE	MCKENZIE
781	11-0706H CLARKS	MCKENZIE		827	12-26H DEBBIE B	MCKENZIE
782	1-10H MANDAREE	MCKENZIE		828	12-26H DEBBIE B	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
829	1-22H MCGRIFF	MCKENZIE		875	13-1806H CLARKS	MCKENZIE
830	12-35H WINDY BO	MCKENZIE		876	13-19 ERRMU	MCKENZIE
831	1-23H SAND CREE	MCKENZIE		877	13-19 ERRMU	MCKENZIE
832	1-23H WINFIELD	MCKENZIE		878	1-31H DAVIS	MCKENZIE
833	1-23H2 ANTELOPE	MCKENZIE		879	13-23H TAT USA	MCKENZIE
834	12-3H3 ROLLEFST	MCKENZIE		880	13-24-10H DARLE	MCKENZIE
835	1-2413H WEST CL	MCKENZIE		881	13-24ENH WOLFF	MCKENZIE
836	1-2413H WEST CL	MCKENZIE		882	1-32H HARMS	MCKENZIE
837	1-24H GEHRIG	MCKENZIE		883	1-33H POLK	MCKENZIE
838	1-2501H HAWKEYE	MCKENZIE		884	13-3H ROLLEFSTA	MCKENZIE
839	1-26-35H BERG T	MCKENZIE		885	1-34H MCKENZIE	MCKENZIE
840	1-27H COLAVITO	MCKENZIE		886	1-34H PVT. FRAZ	MCKENZIE
841	1-27H MCGWIRE	MCKENZIE		887	13A-24-3H FORT	MCKENZIE
842	1-27H SALERS *(	MCKENZIE		888	13A-24-4H FORT	MCKENZIE
843	1-27HA SAND CRE	MCKENZIE		889	13B-24-1H FORT	MCKENZIE
844	1-27H-R GRIZZLY	MCKENZIE		890	13X-35R SAKAKAW	MCKENZIE
845	1-28 WRRMU	MCKENZIE		891	14-10H ZACHERY	MCKENZIE
846	1-28H KILLEBREW	MCKENZIE		892	14-10H ZACHERY	MCKENZIE
847	1-29 WRRMU	MCKENZIE		893	14-11H MANDAREE	MCKENZIE
848	1-29H JACKSON	MCKENZIE		894	14-11H MANDAREE	MCKENZIE
849	1-29H OLE	MCKENZIE		895	14-12H INGA	MCKENZIE
850	1-2H LAZORENKO	MCKENZIE		896	14-12H INGA	MCKENZIE
851	1-2H MYRMIDON	MCKENZIE		897	14-12H INGA	MCKENZIE
852	1-2H MYRMIDON	MCKENZIE		898	14-14H JONES US	MCKENZIE
853	12X-20 MARIANA	MCKENZIE		899	14-16H DARREL Q	MCKENZIE
854	12X-20C MARIANA	MCKENZIE		900	14-16TFH CHEETA	MCKENZIE
855	12X-20G2 MARIAN	MCKENZIE		901	14-1819H CLARKS	MCKENZIE
856	12X-20H MARIANA	MCKENZIE		902	14-19-23 USA	MCKENZIE
857	12X-21 ROEDESKE	MCKENZIE		903	14-21/16H LEVAN	MCKENZIE
858	1-3-10BH PONCHO	MCKENZIE		904	14-22-15-4H3 GR	MCKENZIE
859	1-3-10H BARNSTO	MCKENZIE		905	14-22MBH DAYTON	MCKENZIE
860	1-3-10H BOWLINE	MCKENZIE		906	14-22MBH DAYTON	MCKENZIE
861	1-3-10H BOWLINE	MCKENZIE		907	14-22MBH JACKSO	MCKENZIE
862	1-3-10H BOWLINE	MCKENZIE		908	14-22MBH JACKSO	MCKENZIE
863	1-3-10H BOWLINE	MCKENZIE		909	14-32H GRASSY B	MCKENZIE
864	1-3-10H BOWLINE	MCKENZIE		910	14-3H2 ROLLEFST	MCKENZIE
865	1-3-10H BOWLINE	MCKENZIE		911	149-94-33D-28H	MCKENZIE
866	1-3-10H BOWLINE	MCKENZIE		912	149-94-33D-28H	MCKENZIE
867	1-3-10H BOWLINE	MCKENZIE		913	149-97-30-31-1H	MCKENZIE
868	1-3-10H BOWLINE	MCKENZIE		914	149-97-30-31-2H	MCKENZIE
869	1-3-10H BOWLINE	MCKENZIE		915	149-97-30-31-3H	MCKENZIE
870	1-3-10TH PONCHO	MCKENZIE		916	149-98-11-2-3H	MCKENZIE
871	13-12HW LINSETH	MCKENZIE		917	14C-11-1H FORT	MCKENZIE
872	13-12HW LINSETH	MCKENZIE		918	14C-11-2H FORT	MCKENZIE
873	1-31-30H WOLVER	MCKENZIE		919	14D-11-3H FORT	MCKENZIE
874	13-16TFH FLICKA	MCKENZIE		920	14D-11-4H FORT	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
921	14D-4-1H USA	MCKENZIE		967	1-5-8H BEAR BUT	MCKENZIE
922	14D-4-1H USA	MCKENZIE		968	1-5-8H BEAR BUT	MCKENZIE
923	14D-4-1H USA	MCKENZIE		969	1-5-8H BEAR BUT	MCKENZIE
924	1-4H NETTLES	MCKENZIE		970	1-5-8H BEAR BUT	MCKENZIE
925	14X-11 MONDAK F	MCKENZIE		971	1-5-8H BEAR BUT	MCKENZIE
926	14X-31 MCKENZIE	MCKENZIE		972	15-8H STEVENSON	MCKENZIE
927	14X-34 BENNIE P	MCKENZIE		973	15-8H STEVENSON	MCKENZIE
928	14X-34 CRYSTAL	MCKENZIE		974	15-8HD STEVENSO	MCKENZIE
929	14X-34 DRANNEN	MCKENZIE		975	15-8HD STEVENSO	MCKENZIE
930	14X-35H CHARLSO	MCKENZIE		976	15A-22-7H FORT	MCKENZIE
931	14X-36 ROLFSRUD	MCKENZIE		977	15B-22-3H FORT	MCKENZIE
932	15-0805H CLARKS	MCKENZIE		978	15B-22-4H FORT	MCKENZIE
933	15-0805H CLARKS	MCKENZIE		979	15B-22-5H FORT	MCKENZIE
934	150-94-04A-09H	MCKENZIE		980	15B-22-6H FORT	MCKENZIE
935	150-94-04A-09H	MCKENZIE		981	1-5H BENCH	MCKENZIE
936	150-94-06B-07H	MCKENZIE		982	1-5H GARFIELD	MCKENZIE
937	150-94-3B-10-1H	MCKENZIE		983	16-0706H CLARKS	MCKENZIE
938	150-94-3B-10-1H	MCKENZIE		984	16-22H LUCY LON	MCKENZIE
939	150-94-3B-10-2H	MCKENZIE		985	16-22H LUCY LON	MCKENZIE
940	15-12-1-2H GRIZ	MCKENZIE		986	16-24H RUBIA	MCKENZIE
941	151-95-0403H-1	MCKENZIE		987	16-24H RUBIA	MCKENZIE
942	151-95-0817H-1	MCKENZIE		988	16-3H BENSON	MCKENZIE
943	151-95-0910H-1	MCKENZIE		989	16-3H BENSON	MCKENZIE
944	151-95-1615H-1	MCKENZIE		990	1-6-7H BEAR BUT	MCKENZIE
945	15-22-34-15H SM	MCKENZIE		991	1-6-7H BEAR BUT	MCKENZIE
946	15-22-34-15H SM	MCKENZIE		992	1-6-7H BEAR BUT	MCKENZIE
947	152-94-18B-19H	MCKENZIE		993	1-6-7H BEAR BUT	MCKENZIE
948	152-96-9-4-10H	MCKENZIE		994	1-6-7H BEAR BUT	MCKENZIE
949	152-96-9-4-3H A	MCKENZIE		995	17-16H BEAR DEN	MCKENZIE
950	152-96-9-4-3H A	MCKENZIE		996	17-44H DANKS	MCKENZIE
951	152-97-13-24-1H	MCKENZIE		997	17-44H DANKS	MCKENZIE
952	152-97-13-24-1H	MCKENZIE		998	17C-08-1H FORT	MCKENZIE
953	152-97-13-24-2H	MCKENZIE		999	17C-08-2H FORT	MCKENZIE
954	152-97-13-24-3H	MCKENZIE		1000	17C-08-3H FORT	MCKENZIE
955	15-33-28-2H KOA	MCKENZIE		1001	17C-08-4H FORT	MCKENZIE
956	15-33-28-2H KOA	MCKENZIE		1002	17D-08-5H FORT	MCKENZIE
957	15-33-28-2H3 KO	MCKENZIE		1003	17D-08-6H FORT	MCKENZIE
958	15-33-28-2H3 KO	MCKENZIE		1004	17D-08-7H FORT	MCKENZIE
959	153-94-2215H-1	MCKENZIE		1005	1-7H RIPKIN, JR	MCKENZIE
960	153-94-2215H-1	MCKENZIE		1006	18-19H ROLFSRUD	MCKENZIE
961	153-94-2215H-1	MCKENZIE		1007	1819H-1 HA-SANF	MCKENZIE
962	153-94-2215H-2	MCKENZIE		1008	1819H-1 HA-SANF	MCKENZIE
963	153-94-2215H-2	MCKENZIE		1009	18-19HC PLENTY	MCKENZIE
964	153-94-2215H-2	MCKENZIE		1010	18-19HC PLENTY	MCKENZIE
965	15-5H SORENSON	MCKENZIE		1011	18-21H BEAR DEN	MCKENZIE
966	15-5H SORENSON	MCKENZIE		1012	18-21H BEAR DEN	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
1013	18B-19-1H FORT	MCKENZIE		1059	21-6 6-7H TRUE	MCKENZIE
1014	18B-19-1H FORT	MCKENZIE		1060	2-18 ERRMU	MCKENZIE
1015	18B-19-2H FORT	MCKENZIE		1061	2-1HB PATRICIA	MCKENZIE
1016	18B-19-2H FORT	MCKENZIE		1062	2-1HB PATRICIA	MCKENZIE
1017	18B-19-3H FORT	MCKENZIE		1063	21X-13 BADLANDS	MCKENZIE
1018	18B-19-3H FORT	MCKENZIE		1064	21X-24 101 FEDE	MCKENZIE
1019	18B-19H TF HOGN	MCKENZIE		1065	21X-28 EDWARD (	MCKENZIE
1020	18B-1H USA *(M	MCKENZIE		1066	21X-29 VIOLET	MCKENZIE
1021	18B-2H USA (MWP	MCKENZIE		1067	22-15HB SWEET G	MCKENZIE
1022	1-8H GONZALEZ	MCKENZIE		1068	22-15HB SWEET G	MCKENZIE
1023	19-18 1-H GARMA	MCKENZIE		1069	2-23H ANTELOPE	MCKENZIE
1024	19-18 2TFH GARM	MCKENZIE		1070	2-2425H WEST CL	MCKENZIE
1025	19-18 3H GARMAN	MCKENZIE		1071	2-26-35BH PAUL	MCKENZIE
1026	19-2116H BEAR D	MCKENZIE		1072	2-26-35TH PAUL	MCKENZIE
1027	19-2116H BEAR D	MCKENZIE		1073	2-27H SALERS (M	MCKENZIE
1028	1-9H ANGUS *(MW	MCKENZIE		1074	22C-15-2H USA 1	MCKENZIE
1029	1-9H CARTER	MCKENZIE		1075	22D-15-1H FORT	MCKENZIE
1030	1X-18 MULE CREE	MCKENZIE		1076	22D-15-1H FORT	MCKENZIE
1031	20-1708H BEAR D	MCKENZIE		1077	22D-15-2H FORT	MCKENZIE
1032	20-41H DANKS	MCKENZIE		1078	22D-15-2H FORT	MCKENZIE
1033	20-41H DANKS	MCKENZIE		1079	2-31-30H WOLVER	MCKENZIE
1034	2-09H MANDAREE	MCKENZIE		1080	23-14HZ KATE SO	MCKENZIE
1035	20HC CORN STALK	MCKENZIE		1081	23-14HZ KATE SO	MCKENZIE
1036	20HC CORN STALK	MCKENZIE		1082	23-2019H BEAR D	MCKENZIE
1037	20HC CORN STALK	MCKENZIE		1083	23-25 30-29H HA	MCKENZIE
1038	20HD CORN STALK	MCKENZIE		1084	2-32H HARMS	MCKENZIE
1039	20HD CORN STALK	MCKENZIE		1085	2-33-28TH TAT (	MCKENZIE
1040	20HD CORN STALK	MCKENZIE		1086	2-36H BEAR DEN	MCKENZIE
1041	21-10SH SAND CR	MCKENZIE		1087	2-36H HENDRICKS	MCKENZIE
1042	21-14MBH CRATER	MCKENZIE		1088	23X-3 FEDERAL	MCKENZIE
1043	2-11H FLORIDA	MCKENZIE		1089	24-10H ROEN FED	MCKENZIE
1044	21-25MBH AIDEN	MCKENZIE		1090	24-12H INGA	MCKENZIE
1045	21-25MBH AIDEN	MCKENZIE		1091	24-12H INGA	MCKENZIE
1046	21-29H CHUCK QU	MCKENZIE		1092	24-12H INGA	MCKENZIE
1047	21-29TFH SCOTT	MCKENZIE		1093	24-13H2 BEAR DE	MCKENZIE
1048	21-3 3-10H TRUE	MCKENZIE		1094	24-13H2 BEAR DE	MCKENZIE
1049	21-30H JOANNE Q	MCKENZIE		1095	24-1621H BEAR D	MCKENZIE
1050	21-30TFH JOANNE	MCKENZIE		1096	24-1H KLOSE (DW	MCKENZIE
1051	2-13H CROSS	MCKENZIE		1097	24-20-1H TARPON	MCKENZIE
1052	2-13H CROSS	MCKENZIE		1098	24-20-1RTF TARP	MCKENZIE
1053	21-4-1H TARPON	MCKENZIE		1099	24-20-2RH TARPO	MCKENZIE
1054	21-4-3H TARPON	MCKENZIE		1100	24-20-2RTF TARP	MCKENZIE
1055	21-4H TARPON FE	MCKENZIE		1101	24-20-3RTF TARP	MCKENZIE
1056	21-5-2H WRIGHT	MCKENZIE		1102	24-23H KNUTE	MCKENZIE
1057	2-15H DAHL FEDE	MCKENZIE		1103	24-2HR ERRMU	MCKENZIE
1058	21-5H WRIGHT FE	MCKENZIE		1104	24-30H STORM FE	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
1105	24-4 USA	MCKENZIE		1151	3-11H FLORIDA	MCKENZIE
1106	24X-12 MONDAK F	MCKENZIE		1152	31-20H QUALE US	MCKENZIE
1107	25-26H CLIFFSID	MCKENZIE		1153	31-26MBH HAMMER	MCKENZIE
1108	26-1 SILURIAN 2	MCKENZIE		1154	31-28H JAIR	MCKENZIE
1109	26-35H SPOTTED	MCKENZIE		1155	31-28H JAIR	MCKENZIE
1110	26-35H SPOTTED	MCKENZIE		1156	31-29H HILMAN	MCKENZIE
1111	26B-35-1H KLOSE	MCKENZIE		1157	31-29H HILMAN	MCKENZIE
1112	27-34H KYW	MCKENZIE		1158	31-29H HILMAN	MCKENZIE
1113	27-34H KYW	MCKENZIE		1159	3-12H KUHN FEDE	MCKENZIE
1114	27-34H WOLF	MCKENZIE		1160	31-30 1H YOUNG	MCKENZIE
1115	27-34H WOLF	MCKENZIE		1161	31-30 1H YOUNG	MCKENZIE
1116	28-21-1-H STUBB	MCKENZIE		1162	31-30HA RUBY *(	MCKENZIE
1117	28-44H SHERWOOD	MCKENZIE		1163	31-30HB RUBY (M	MCKENZIE
1118	28-44H SHERWOOD	MCKENZIE		1164	31-30HB RUBY (M	MCKENZIE
1119	28D-21H TF MILE	MCKENZIE		1165	31-30HW RUBY (M	MCKENZIE
1120	28D-21H TF MILE	MCKENZIE		1166	31-30HX RUBY (M	MCKENZIE
1121	29-20 1-TFH ELD	MCKENZIE		1167	31-32 TRUE FEDE	MCKENZIE
1122	29-20 1-TFH ELD	MCKENZIE		1168	31-32 TRUE FEDE	MCKENZIE
1123	29-32-2H MOBERG	MCKENZIE		1169	31-4-1H JOHNSTO	MCKENZIE
1124	29-32-3H MOBERG	MCKENZIE		1170	3-14H ALPHA (M	MCKENZIE
1125	29-32H DELORES	MCKENZIE		1171	31-4H CROW FLIE	MCKENZIE
1126	29-32H DELORES	MCKENZIE		1172	31-4H CROW FLIE	MCKENZIE
1127	29-32HA LUCY EV	MCKENZIE		1173	31-6 1H GYDA (M	MCKENZIE
1128	29-32HB LUCY EV	MCKENZIE		1174	3-16H COLUMBUS	MCKENZIE
1129	29-32HX LUCY EV	MCKENZIE		1175	31X-9 LUNDIN FE	MCKENZIE
1130	2-9H ANGUS (MWP	MCKENZIE		1176	3-21H BLUE BUTT	MCKENZIE
1131	2D-3-1H USA	MCKENZIE		1177	3-21H BLUE BUTT	MCKENZIE
1132	2D-3-1H USA	MCKENZIE		1178	32-29 1H LARSEN	MCKENZIE
1133	2D-3-1H USA	MCKENZIE		1179	32-29H BEARSTAI	MCKENZIE
1134	30-19 1H EVELAN	MCKENZIE		1180	32-29H BEARSTAI	MCKENZIE
1135	30-31 1-H BRODE	MCKENZIE		1181	3-23H ANTELOPE	MCKENZIE
1136	30-31 1-H BRODE	MCKENZIE		1182	3-2413H HAWKEYE	MCKENZIE
1137	30-31 2H BRODER	MCKENZIE		1183	3-2413H HAWKEYE	MCKENZIE
1138	30-31 3H BRODER	MCKENZIE		1184	3-2413H HAWKEYE	MCKENZIE
1139	30-31 4TFH BROD	MCKENZIE		1185	3-2413H WEST CL	MCKENZIE
1140	3031147102-BTF	MCKENZIE		1186	3-25-13-3H EAST	MCKENZIE
1141	30-31H SNOWSHOE	MCKENZIE		1187	3-25-36-15H EAS	MCKENZIE
1142	31-13H AIDEN	MCKENZIE		1188	3-27H SALERS FE	MCKENZIE
1143	31-13H AIDEN	MCKENZIE		1189	3-28HR FEDERAL	MCKENZIE
1144	31-13MBH AIDEN	MCKENZIE		1190	3-28HR FEDERAL	MCKENZIE
1145	31-13MBH AIDEN	MCKENZIE		1191	32D-29H MONARCH	MCKENZIE
1146	31-13MBH AIDEN	MCKENZIE		1192	32D-29H TF VICE	MCKENZIE
1147	31-14H BRADFIEL	MCKENZIE		1193	33-11H AUDREY R	MCKENZIE
1148	31-14MBH CRATER	MCKENZIE		1194	33-11H RED TIPP	MCKENZIE
1149	31-16-3H FINSAA	MCKENZIE		1195	33-28H GERALD H	MCKENZIE
1150	31-16-4H FINSAA	MCKENZIE		1196	33-28H GERALD H	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
1197	3328H-1 BB-EIDE	MCKENZIE		1243	4-11H KODIAK FE	MCKENZIE
1198	3328H-1 BB-EIDE	MCKENZIE		1244	4-12/13H DAILEY	MCKENZIE
1199	3328H-1 BB-EIDE	MCKENZIE		1245	4-12R ERRMU	MCKENZIE
1200	3328H-2 BB-EIDE	MCKENZIE		1246	41-3-1H SKAAR F	MCKENZIE
1201	3328H-2 BB-EIDE	MCKENZIE		1247	41-3-2H SKAAR F	MCKENZIE
1202	3328H-2 BB-EIDE	MCKENZIE		1248	41-3-3H SKAAR F	MCKENZIE
1203	33-35 2H MB1 TR	MCKENZIE		1249	4-13H LEVANG	MCKENZIE
1204	3-34 1H LUND	MCKENZIE		1250	41-3TFH SKAAR F	MCKENZIE
1205	3-34 1H LUND	MCKENZIE		1251	41-3TFHU SKAAR	MCKENZIE
1206	33-4 1-H SEDLAC	MCKENZIE		1252	41-5-2H GREGORY	MCKENZIE
1207	3-35-26BH ZORRO	MCKENZIE		1253	41-5H GREGORY W	MCKENZIE
1208	3-35H BOHMBACH	MCKENZIE		1254	41-6SWH SERRAHN	MCKENZIE
1209	33D-28H NIMBUS	MCKENZIE		1255	4-1H HENDERSON	MCKENZIE
1210	33D-28H NIMBUS	MCKENZIE		1256	41X-15 ALKALI C	MCKENZIE
1211	33D-28H NIMBUS	MCKENZIE		1257	41X-19D WALTON	MCKENZIE
1212	33DHTF COYOTE	MCKENZIE		1258	41X-19G WALTON	MCKENZIE
1213	33DHTF COYOTE	MCKENZIE		1259	41X-19H WALTON	MCKENZIE
1214	34-22H TAT USA	MCKENZIE		1260	41X-30 BURNS FE	MCKENZIE
1215	34-27HB GOOD VO	MCKENZIE		1261	41X-5G NELSON F	MCKENZIE
1216	34-27HD GOOD VO	MCKENZIE		1262	41X-6 JORGENSON	MCKENZIE
1217	34-27HZ GOOD VO	MCKENZIE		1263	4-23H ANTELOPE	MCKENZIE
1218	34-9H CONNER	MCKENZIE		1264	4-2425H WEST CL	MCKENZIE
1219	34-9H CONNER	MCKENZIE		1265	4-25H HENDERSON	MCKENZIE
1220	34X-12B CHARLSO	MCKENZIE		1266	4-25H NATHAN HA	MCKENZIE
1221	34X-14 FEDERAL	MCKENZIE		1267	4-25H NATHAN HA	MCKENZIE
1222	34X-14 JOHNSRUD	MCKENZIE		1268	4-28 WRRMU	MCKENZIE
1223	34X-31-1 USA	MCKENZIE		1269	42X-12 ALBERT F	MCKENZIE
1224	34X-36G RUBY ST	MCKENZIE		1270	42X-36 DAKOTA	MCKENZIE
1225	35-26 1H KNIGHT	MCKENZIE		1271	4-30H BEAR DEN	MCKENZIE
1226	35-26 1H KNIGHT	MCKENZIE		1272	4-31-30TFH WOLV	MCKENZIE
1227	35-26 2H KNIGHT	MCKENZIE		1273	4-35H BOHMBACH	MCKENZIE
1228	35-26 3TFH KNIG	MCKENZIE		1274	4-36H STATE	MCKENZIE
1229	35-26 4H KNIGHT	MCKENZIE		1275	43X-19 VAN DYKE	MCKENZIE
1230	35-26H MORSETTE	MCKENZIE		1276	43X-19 VAN DYKE	MCKENZIE
1231	35-26H MORSETTE	MCKENZIE		1277	43X-19 WALTON	MCKENZIE
1232	35-26HD MORSETT	MCKENZIE		1278	43X-19 WALTON	MCKENZIE
1233	35-26HX MORSETT	MCKENZIE		1279	44-14MBH ULW OL	MCKENZIE
1234	35-26HZ MORSETT	MCKENZIE		1280	44-19-1RH TARPO	MCKENZIE
1235	36-31H TF1 LIBE	MCKENZIE		1281	44-19-1RTF TARP	MCKENZIE
1236	3-9H ANGUS (MWP	MCKENZIE		1282	44-19-2RH TARPO	MCKENZIE
1237	41-11H BICENTEN	MCKENZIE		1283	44-19-2RTF TARP	MCKENZIE
1238	41-14MBH AMANDA	MCKENZIE		1284	44-19-3RTF TARP	MCKENZIE
1239	41-14MBH AMANDA	MCKENZIE		1285	44-19TFHU TARPO	MCKENZIE
1240	41-14MBH AMANDA	MCKENZIE		1286	44-23H WOLSKI	MCKENZIE
1241	41-14MBH OLE BO	MCKENZIE		1287	44-31H BUCKHORN	MCKENZIE
1242	41-14TFH CRATER	MCKENZIE		1288	44-32H CHARLSON	MCKENZIE

	WELL ID	COUNTY			WELL ID	COUNTY
1289	44-33 4-9H SLAS	MCKENZIE		1335	7-1X SILURIAN 7	MCKENZIE
1290	44-33H CHARLSON	MCKENZIE		1336	7-1X SILURIAN 7	MCKENZIE
1291	44X-1 DWYER FED	MCKENZIE		1337	7-1X SILURIAN 7	MCKENZIE
1292	44X-10 ALKALI C	MCKENZIE		1338	7-1X SILURIAN 7	MCKENZIE
1293	44X-16 STATE FE	MCKENZIE		1339	7-28H WRRMU	MCKENZIE
1294	44X-20A BULLY F	MCKENZIE		1340	7-3H1 ROLLEFSTA	MCKENZIE
1295	44X-20B BULLY F	MCKENZIE		1341	7-6 1-H JOHNSTO	MCKENZIE
1296	44X-20E BULLY F	MCKENZIE		1342	7-6 2TFH JOHNST	MCKENZIE
1297	44X-20F BULLY F	MCKENZIE		1343	7-6 7H JOHNSTON	MCKENZIE
1298	44X-31H CHARLSO	MCKENZIE		1344	7D-6-1H FORT BE	MCKENZIE
1299	44X-4 TRACY FED	MCKENZIE		1345	7D-6-2H FORT BE	MCKENZIE
1300	4-9H ANGUS FEDE	MCKENZIE		1346	7D-6-3H FORT BE	MCKENZIE
1301	519 ANTELOPE-MA	MCKENZIE		1347	7D-6-4H FORT BE	MCKENZIE
1302	519 ANTELOPE-MA	MCKENZIE		1348	8-3H3 ROLLEFSTA	MCKENZIE
1303	519HR ANTELOPE-	MCKENZIE		1349	8-5 1-H RICHARD	MCKENZIE
1304	5-2 1H FOREMAN	MCKENZIE		1350	8-5-6-5H3 KOALA	MCKENZIE
1305	520HR ANTELOPE-	MCKENZIE		1351	9-04H MANDAREE	MCKENZIE
1306	520HR ANTELOPE-	MCKENZIE		1352	9-04H MANDAREE	MCKENZIE
1307	520HR ANTELOPE-	MCKENZIE		1353	9-1 SIL UNIT 9	MCKENZIE
1308	523 ANTELOPE-MA	MCKENZIE		1354	9-1 SIL UNIT 9	MCKENZIE
1309	523 ANTELOPE-MA	MCKENZIE		1355	9-1 SIL UNIT 9	MCKENZIE
1310	523 ANTELOPE-MA	MCKENZIE		1356	9-3H ROLLEFSTAD	MCKENZIE
1311	5-2425H WEST CL	MCKENZIE		1357	9-4H WOLF	MCKENZIE
1312	54-1 SILURIAN 5	MCKENZIE		1358	9-5-6-5H KOALA	MCKENZIE
1313	54-1 SILURIAN 5	MCKENZIE		1359	9-5-6-5H KOALA	MCKENZIE
1314	54-1 SILURIAN 5	MCKENZIE		1360	9C-10-1H FORT B	MCKENZIE
1315	54-1 SILURIAN 5	MCKENZIE		1361	9C-10-2H FORT B	MCKENZIE
1316	5-8H SAFELY USA	MCKENZIE		1362	9C-10-3H FORT B	MCKENZIE
1317	5-8H SAFELY USA	MCKENZIE		1363	A203X CMNU	MCKENZIE
1318	5-9H ANGUS FEDE	MCKENZIE		1364	A203X CMNU	MCKENZIE
1319	5C-2-3 CHARLSON	MCKENZIE		1365	A203X CMNU	MCKENZIE
1320	5C-2-3 CHARLSON	MCKENZIE		1366	A203X CMNU	MCKENZIE
1321	5C-2-3 CHARLSON	MCKENZIE		1367	B151-95-2122H1	MCKENZIE
1322	5D-4-4HR USA	MCKENZIE		1368	F208XHR BBMU	MCKENZIE
1323	5D-4-4HR USA	MCKENZIE		1369	F24-34-2H AKOVE	MCKENZIE
1324	5D-4-4HR USA	MCKENZIE		1370	G208 BBMU	MCKENZIE
1325	6-1 SILURIAN 6	MCKENZIE		1371	H-517HR AMU (DW	MCKENZIE
1326	6-1 SILURIAN 6	MCKENZIE		1372	H-517HR AMU (DW	MCKENZIE
1327	6-1 SILURIAN 6	MCKENZIE		1373	H-517HR AMU (DW	MCKENZIE
1328	6-17H JAMESTOWN	MCKENZIE		1374	1-01-02H-149-91	MCLEAN
1329	6-24H ROCHESTER	MCKENZIE		1375	1-05-06H-149-90	MCLEAN
1330	6A-7-1H USA 1	MCKENZIE		1376	1-08H-149-90 MH	MCLEAN
1331	6D-4-4H MCKENZI	MCKENZIE		1377	1-09-16H-149-90	MCLEAN
1332	6D-4-4H MCKENZI	MCKENZIE		1378	11-17H ONE FEAT	MCLEAN
1333	6D-4-4H MCKENZI	MCKENZIE		1379	11-28H THOMAS M	MCLEAN
1334	7-17H JAMESTOWN	MCKENZIE		1380	1-13-14H-150-91	MCLEAN

	WELL ID	COUNTY			WELL ID	COUNTY
1381	1-18H-150-90 MH	MCLEAN		1427	11-16H LUTHER U	MOUNTRAIL
1382	1-19H-150-90 MH	MCLEAN		1428	11-16H LUTHER U	MOUNTRAIL
1383	1-29-30H-150-90	MCLEAN		1429	11-17H ELK USA	MOUNTRAIL
1384	1-32-31H-150-90	MCLEAN		1430	11-18H BAKER US	MOUNTRAIL
1385	14-34H VORWERK	MCLEAN		1431	11-18TFH BAKER	MOUNTRAIL
1386	14-8H TORGERSON	MCLEAN		1432	11-1H HOWARD US	MOUNTRAIL
1387	2-01-02H-149-91	MCLEAN		1433	11-1H HOWARD US	MOUNTRAIL
1388	2-04-03H-149-90	MCLEAN		1434	1-12H OLSON	MOUNTRAIL
1389	2-05-06H-149-90	MCLEAN		1435	1-12H OLSON	MOUNTRAIL
1390	2-07-18H-149-90	MCLEAN		1436	11-2HC GEORGE E	MOUNTRAIL
1391	21-16H WALDOCK	MCLEAN		1437	1-12HW OLSON	MOUNTRAIL
1392	21-28H THOMAS M	MCLEAN		1438	11-2HZ GEORGE E	MOUNTRAIL
1393	2-13-14H-150-91	MCLEAN		1439	1-13-12H PALERM	MOUNTRAIL
1394	2-29-30H-150-90	MCLEAN		1440	1-13-12H PALERM	MOUNTRAIL
1395	2-32-31H-150-90	MCLEAN		1441	1-13-12H PALERM	MOUNTRAIL
1396	31-16H BLACK HA	MCLEAN		1442	1-13-12H PALERM	MOUNTRAIL
1397	31-17H ONE FEAT	MCLEAN		1443	1-13-12H PALERM	MOUNTRAIL
1398	34-7H GOODBIRD	MCLEAN		1444	1-13-12H PALERM	MOUNTRAIL
1399	34-8H SITTING O	MCLEAN		1445	1-13-12H PALERM	MOUNTRAIL
1400	34-9H DRIVER US	MCLEAN		1446	1-13-12H PALERM	MOUNTRAIL
1401	44-7H GOODBIRD	MCLEAN		1447	11-4H MHA USA	MOUNTRAIL
1402	44-7H GOODBIRD	MCLEAN		1448	11-4H PETERSON	MOUNTRAIL
1403	5-05-06H-149-90	MCLEAN		1449	11-4TFH MHA USA	MOUNTRAIL
1404	5-13-14H-150-91	MCLEAN		1450	12-1HC OLSON *(	MOUNTRAIL
1405	5-29-30H-150-90	MCLEAN		1451	12-1HD OLSON (M	MOUNTRAIL
1406	5-32-31H-150-90	MCLEAN		1452	12-1HD OLSON (M	MOUNTRAIL
1407	6-05-06H-149-90	MCLEAN		1453	12-1HY OLSON (M	MOUNTRAIL
1408	6-32-31H-150-90	MCLEAN		1454	12-27TFH LEE FE	MOUNTRAIL
1409	10-11 1-H ESTHE	MOUNTRAIL		1455	12-32TFH KNIFE	MOUNTRAIL
1410	10-11 2TFH ESTH	MOUNTRAIL		1456	1-24-25H 1 PALE	MOUNTRAIL
1411	10-11 6TFH ESTH	MOUNTRAIL		1457	1-24-25H 1 PALE	MOUNTRAIL
1412	10-11 7H ESTHER	MOUNTRAIL		1458	1-24-25H 1 PALE	MOUNTRAIL
1413	10-3H STATE OF	MOUNTRAIL		1459	126-2523H VAN H	MOUNTRAIL
1414	10-3H STATE OF	MOUNTRAIL		1460	1-27H-152-92 FE	MOUNTRAIL
1415	10-3H STATE OF	MOUNTRAIL		1461	13-14H LIBERTY	MOUNTRAIL
1416	10-3HA STATE OF	MOUNTRAIL		1462	13-14H MANDAN	MOUNTRAIL
1417	10-3HC STATE OF	MOUNTRAIL		1463	13-24H FBIR	MOUNTRAIL
1418	10-3HC STATE OF	MOUNTRAIL		1464	13-24H FBIR	MOUNTRAIL
1419	10-3HW STATE OF	MOUNTRAIL		1465	13-24HA GLENN F	MOUNTRAIL
1420	10-3HZ STATE OF	MOUNTRAIL		1466	13-24HC FBIR (M	MOUNTRAIL
1421	10-3HZ STATE OF	MOUNTRAIL		1467	13-24HD FBIR (M	MOUNTRAIL
1422	106-0107H LIBER	MOUNTRAIL		1468	13-24HW GLENN F	MOUNTRAIL
1423	106-0107H LIBER	MOUNTRAIL		1469	13-24HX GLENN F	MOUNTRAIL
1424	1-10-11-12H PER	MOUNTRAIL		1470	13-24HZ FBIR (M	MOUNTRAIL
1425	11-16H ELLA USA	MOUNTRAIL		1471	13-32H KNIFE RI	MOUNTRAIL
1426	11-16H ELLA USA	MOUNTRAIL		1472	13-32TFH KNIFE	MOUNTRAIL

	WELL ID	COUNTY			WELL ID	COUNTY
1473	13-3TFH BURL TT	MOUNTRAIL		1519	21-17H LONGORIA	MOUNTRAIL
1474	1-34-35H-152-92	MOUNTRAIL		1520	21-17H RED FEAT	MOUNTRAIL
1475	14-22H SHIRLEY	MOUNTRAIL		1521	21-17H RED FEAT	MOUNTRAIL
1476	14-22H SHIRLEY	MOUNTRAIL		1522	21-17TFH WHEELE	MOUNTRAIL
1477	14-23H LIBERTY	MOUNTRAIL		1523	2-11H MASON	MOUNTRAIL
1478	14-23H SPOTTED	MOUNTRAIL		1524	2-11H MASON	MOUNTRAIL
1479	14-23H SPOTTED	MOUNTRAIL		1525	2-11H MASON	MOUNTRAIL
1480	14-23HC GEORGE	MOUNTRAIL		1526	2-11HA MASON *(	MOUNTRAIL
1481	14-23HC GEORGE	MOUNTRAIL		1527	2-11HW-R MASON	MOUNTRAIL
1482	14-23HD GEORGE	MOUNTRAIL		1528	2-11HW-R MASON	MOUNTRAIL
1483	14-23HD GEORGE	MOUNTRAIL		1529	2-11HX MASON (M	MOUNTRAIL
1484	14-23HW SPOTTED	MOUNTRAIL		1530	2-11HX MASON (M	MOUNTRAIL
1485	14-23HY SPOTTED	MOUNTRAIL		1531	21-28H JACK PEN	MOUNTRAIL
1486	14-23HZ GEORGE	MOUNTRAIL		1532	21-28H JACK PEN	MOUNTRAIL
1487	14-23HZ GEORGE	MOUNTRAIL		1533	21-2H GLADYS US	MOUNTRAIL
1488	14-29TFX ELSIE	MOUNTRAIL		1534	21-2H GLADYS US	MOUNTRAIL
1489	14-29XH SMITH F	MOUNTRAIL		1535	21-33H LEVI FED	MOUNTRAIL
1490	14-4-3XH WALDOC	MOUNTRAIL		1536	21-33TFH SELMA	MOUNTRAIL
1491	14-6TFX ROHDE F	MOUNTRAIL		1537	21-3H HENRY CHA	MOUNTRAIL
1492	15-22H ADAM GOO	MOUNTRAIL		1538	21-3H HENRY CHA	MOUNTRAIL
1493	15-22H ADAM GOO	MOUNTRAIL		1539	21-4H BREHM	MOUNTRAIL
1494	15-22H ADAM GOO	MOUNTRAIL		1540	21-4TFH FOREMAN	MOUNTRAIL
1495	15-22HC ADAM GO	MOUNTRAIL		1541	21-5H FISHER US	MOUNTRAIL
1496	15-22HC ARIKARA	MOUNTRAIL		1542	21-5H FISHER US	MOUNTRAIL
1497	15-22HD ADAM GO	MOUNTRAIL		1543	21-6TFH JESSICA	MOUNTRAIL
1498	15-22HW ADAM GO	MOUNTRAIL		1544	21-6TFH JESSICA	MOUNTRAIL
1499	15-22HX ADAM GO	MOUNTRAIL		1545	2-33-4H LUNKER	MOUNTRAIL
1500	15-22HY ADAM GO	MOUNTRAIL		1546	2-35-4H 2 KING	MOUNTRAIL
1501	16-15H PENNINGT	MOUNTRAIL		1547	2-35-4H 2 KING	MOUNTRAIL
1502	16-15H PENNINGT	MOUNTRAIL		1548	2-35-4H 2 KING	MOUNTRAIL
1503	16-21H ELK	MOUNTRAIL		1549	2-35-4H 2 KING	MOUNTRAIL
1504	16-21HC DANCING	MOUNTRAIL		1550	2-35-4H 2 KING	MOUNTRAIL
1505	16-21HC DANCING	MOUNTRAIL		1551	2-35-4H 2 KING	MOUNTRAIL
1506	16-21HD DANCING	MOUNTRAIL		1552	2-35-4H 2 KING	MOUNTRAIL
1507	16-21HD DANCING	MOUNTRAIL		1553	24-20H SHOBE	MOUNTRAIL
1508	16-21HW ELK *(M	MOUNTRAIL		1554	24-20H SHOBE	MOUNTRAIL
1509	16-21HX ELK (MW	MOUNTRAIL		1555	24-31H JAHNKE U	MOUNTRAIL
1510	16-21HZ DANCING	MOUNTRAIL		1556	24-31H JAHNKE U	MOUNTRAIL
1511	16-21HZ DANCING	MOUNTRAIL		1557	24-31TFH JAHNKE	MOUNTRAIL
1512	16-4H VAN HOOK	MOUNTRAIL		1558	24-31TFH JAHNKE	MOUNTRAIL
1513	16-4H VAN HOOK	MOUNTRAIL		1559	24-7H GALEN FOX	MOUNTRAIL
1514	16-9H BRUNSELL	MOUNTRAIL		1560	24-7H GALEN FOX	MOUNTRAIL
1515	16-9H BRUNSELL	MOUNTRAIL		1561	24HD COYOTE NEC	MOUNTRAIL
1516	18-14H LIBERTY	MOUNTRAIL		1562	24HD COYOTE NEC	MOUNTRAIL
1517	19-23H LIBERTY	MOUNTRAIL		1563	25-0107H LIBERT	MOUNTRAIL
1518	19-2523H VAN HO	MOUNTRAIL		1564	25-0107H LIBERT	MOUNTRAIL

	WELL ID	COUNTY			WELL ID	COUNTY
1565	31-16H LUTHER U	MOUNTRAIL		1611	41-4H RAYMOND U	MOUNTRAIL
1566	31-16H LUTHER U	MOUNTRAIL		1612	41-4TFH PENNING	MOUNTRAIL
1567	31-17H CONKLIN	MOUNTRAIL		1613	41-4TFH PENNING	MOUNTRAIL
1568	31-17H RED FEAT	MOUNTRAIL		1614	41-5H FISHER US	MOUNTRAIL
1569	31-17H RED FEAT	MOUNTRAIL		1615	41-5H FISHER US	MOUNTRAIL
1570	31-17TFH SNOW B	MOUNTRAIL		1616	41-6H CUMMINGS	MOUNTRAIL
1571	31-18H ARVID BA	MOUNTRAIL		1617	41-6H EVERETT F	MOUNTRAIL
1572	31-18H ARVID BA	MOUNTRAIL		1618	41-6H EVERETT F	MOUNTRAIL
1573	31-2H WILLIAM U	MOUNTRAIL		1619	41-6TFH CUMMING	MOUNTRAIL
1574	31-2TFH WILLIAM	MOUNTRAIL		1620	41-8H BETTY SHO	MOUNTRAIL
1575	31-3TFH HENRY C	MOUNTRAIL		1621	41-8H BETTY SHO	MOUNTRAIL
1576	31-4H PENNINGTO	MOUNTRAIL		1622	42-4TFH BILL TT	MOUNTRAIL
1577	31-4H PENNINGTO	MOUNTRAIL		1623	4-25H REHAK FED	MOUNTRAIL
1578	31-6H EVERETT F	MOUNTRAIL		1624	4-25H REHAK FED	MOUNTRAIL
1579	31-6H EVERETT F	MOUNTRAIL		1625	42-8-2TFH RODNE	MOUNTRAIL
1580	31-6TFH OREN US	MOUNTRAIL		1626	4-33 1-H WRIGHT	MOUNTRAIL
1581	31-6TFH OREN US	MOUNTRAIL		1627	4-33 2TFH WRIGH	MOUNTRAIL
1582	34-12H TARA JO	MOUNTRAIL		1628	4-33 5H WRIGHT	MOUNTRAIL
1583	34-12TFH TARA J	MOUNTRAIL		1629	43-8H WALJEN US	MOUNTRAIL
1584	34-21H JERRY PE	MOUNTRAIL		1630	43-8TFH WALTOM	MOUNTRAIL
1585	34-21H JERRY PE	MOUNTRAIL		1631	44-19H CHARLES	MOUNTRAIL
1586	34-22H BOTTLESO	MOUNTRAIL		1632	44-19H CHARLES	MOUNTRAIL
1587	34-22H BOTTLESO	MOUNTRAIL		1633	44-31H BARTLESO	MOUNTRAIL
1588	34-3 1-H AFSETH	MOUNTRAIL		1634	44-31H BARTLESO	MOUNTRAIL
1589	34-3 1-H AFSETH	MOUNTRAIL		1635	44-33H EARL PEN	MOUNTRAIL
1590	34-31H JAY SAND	MOUNTRAIL		1636	44-34H WENINGER	MOUNTRAIL
1591	34-31H JAY SAND	MOUNTRAIL		1637	44-34H WENINGER	MOUNTRAIL
1592	34-35H ARNDT FE	MOUNTRAIL		1638	4-9HA ROGGENBUC	MOUNTRAIL
1593	34-4H JONES	MOUNTRAIL		1639	4-9HW ROGGENBUC	MOUNTRAIL
1594	34-5H JASPER L	MOUNTRAIL		1640	4-9HX ROGGENBUC	MOUNTRAIL
1595	34-5H JASPER L	MOUNTRAIL		1641	4-9HY ROGGENBUC	MOUNTRAIL
1596	34X-36 SORKNESS	MOUNTRAIL		1642	4HC VAN HOOK R/	MOUNTRAIL
1597	35-4H KING (DWO	MOUNTRAIL		1643	5-25H1 REHAK FE	MOUNTRAIL
1598	35-4H KING (DWO	MOUNTRAIL		1644	5-25H1 REHAK FE	MOUNTRAIL
1599	35-4H KING (DWO	MOUNTRAIL		1645	5792 24-9H EMIE	MOUNTRAIL
1600	35-4H KING (DWO	MOUNTRAIL		1646	5792 24-9H EMIE	MOUNTRAIL
1601	35-4H KING (DWO	MOUNTRAIL		1647	5792 24-9H EMIE	MOUNTRAIL
1602	41-15TFH RUDOLP	MOUNTRAIL		1648	5792 24-9H EMIE	MOUNTRAIL
1603	41-17H RANDI US	MOUNTRAIL		1649	5792 24-9H EMIE	MOUNTRAIL
1604	41-17H RANDI US	MOUNTRAIL		1650	5792 24-9H EMIE	MOUNTRAIL
1605	41-17TFH BIG EA	MOUNTRAIL		1651	5-8H MARY R SMI	MOUNTRAIL
1606	41-24TFX ROGGEN	MOUNTRAIL		1652	5-8H MARY R SMI	MOUNTRAIL
1607	41-28H BLANCHET	MOUNTRAIL		1653	5-8H MARY R SMI	MOUNTRAIL
1608	41-3H HENRY CHA	MOUNTRAIL		1654	5-8HC DORA SMIT	MOUNTRAIL
1609	41-4H GORDON TT	MOUNTRAIL		1655	5-8HC DORA SMIT	MOUNTRAIL
1610	41-4H RAYMOND U	MOUNTRAIL		1656	5-8HD DORA SMIT	MOUNTRAIL

	WELL ID	COUNTY			WELL ID	COUNTY
1657	5-8HD DORA SMIT	MOUNTRAIL		1703	15-31H THOMPSON	WILLIAMS
1658	5-8HW MARY R SM	MOUNTRAIL		1704	15-31H THOMPSON	WILLIAMS
1659	5-8HX MARY R SM	MOUNTRAIL		1705	15-33-28-2H THO	WILLIAMS
1660	5-8HY DORA SMIT	MOUNTRAIL		1706	15-33-28-2H THO	WILLIAMS
1661	5-8HY DORA SMIT	MOUNTRAIL		1707	155-97-0310H-1	WILLIAMS
1662	6-25H1 REHAK FE	MOUNTRAIL		1708	1-5-8-15H P BIB	WILLIAMS
1663	7-21H COTTONWOO	MOUNTRAIL		1709	1-5-8-15H P BIB	WILLIAMS
1664	7-25H REHAK FED	MOUNTRAIL		1710	1-5-8-16H3 P BI	WILLIAMS
1665	7-8-9HC EDWARD	MOUNTRAIL		1711	1-5-8-16H3 P BI	WILLIAMS
1666	8-5 1-H ROGER S	MOUNTRAIL		1712	159-102-8-5-1H	WILLIAMS
1667	8-5 1-H ROGER S	MOUNTRAIL		1713	19-20H GARY RUS	WILLIAMS
1668	8-5 1-H ROGER S	MOUNTRAIL		1714	20-17 1H LEOPAR	WILLIAMS
1669	9-4HB BRUNSELL	MOUNTRAIL		1715	2-17-20-15H P V	WILLIAMS
1670	9-4HZ BRUNSELL	MOUNTRAIL		1716	2-17-20-15H P V	WILLIAMS
1671	14-10PH KADRMAS	STARK		1717	2-27H BERGSTROM	WILLIAMS
1672	14-11PH KADRMAS	STARK		1718	2-27H BERGSTROM	WILLIAMS
1673	14-12PH RIDL FE	STARK		1719	2-28H BERGSTROM	WILLIAMS
1674	14-23H PAVEL	STARK		1720	23-21H HARDSCRA	WILLIAMS
1675	21-16H DACKER	STARK		1721	24-20H OPAL HOL	WILLIAMS
1676	21-16H DACKER	STARK		1722	24X-35 DONNELLY	WILLIAMS
1677	21-16H DIAMOND	STARK		1723	2-5H COLUMBIA	WILLIAMS
1678	21-16H WEILER	STARK		1724	29-32 1H OWAN (	WILLIAMS
1679	34-10PH KADRMAS	STARK		1725	29-32 1H OWAN (	WILLIAMS
1680	34-11PH KADRMAS	STARK		1726	2TFH JAKE 2-11	WILLIAMS
1681	34-12TFH RIDL(D	STARK		1727	31-30H IONE BAR	WILLIAMS
1682	41-25PH TALKING	STARK		1728	3-16-21-13H3 P	WILLIAMS
1683	42-4PH NEWTON F	STARK		1729	3-16-21-13H3 P	WILLIAMS
1684	42-4PH NEWTON F	STARK		1730	3-16-21-14H P S	WILLIAMS
1685	44-10PH KADRMAS	STARK		1731	3-16-21-14H P S	WILLIAMS
1686	44-11PH KADRMAS	STARK		1732	31X-13C AMES	WILLIAMS
1687	44-4PH NEWTON F	STARK		1733	31X-3 LONNIE	WILLIAMS
1688	44-4PH NEWTON F	STARK		1734	31X-3 LONNIE	WILLIAMS
1689	44-7PH BOCK FED	STARK		1735	32-29 1H SYLVES	WILLIAMS
1690	11X-15B KANYER	WILLIAMS		1736	32-29 1H SYLVES	WILLIAMS
1691	11X-15F KANYER	WILLIAMS		1737	32-29 2TFH BEAG	WILLIAMS
1692	11X-16 OLSON ST	WILLIAMS		1738	32-29 2TFH BEAG	WILLIAMS
1693	11X-16 TRUAX ST	WILLIAMS		1739	32-29 3H BEAGLE	WILLIAMS
1694	1-2-11H PASTERN	WILLIAMS		1740	32-29 3H BEAGLE	WILLIAMS
1695	1-22H FASCHING	WILLIAMS		1741	32-29 3TFH SYLV	WILLIAMS
1696	1-23-14H C RASM	WILLIAMS		1742	32-29 3TFH SYLV	WILLIAMS
1697	1-27-34H QUARNE	WILLIAMS		1743	32-29 4TFH SYLV	WILLIAMS
1698	1-29-32H BOYDS	WILLIAMS		1744	32-29 4TFH SYLV	WILLIAMS
1699	12X-18 MENDENHA	WILLIAMS		1745	33-28 2H HUSKY	WILLIAMS
1700	13-24H HARP (DW	WILLIAMS		1746	33-28 2H HUSKY	WILLIAMS
1701	1-34H1 PAMELA A	WILLIAMS		1747	33-28 4TFH HUSK	WILLIAMS
1702	13-8-20-13H3 WI	WILLIAMS		1748	33-28 4TFH HUSK	WILLIAMS

	WELL ID	COUNTY			WELL ID	COUNTY
1749	33-28 6H HUSKY	WILLIAMS				
1750	33-28 6H HUSKY	WILLIAMS				
1751	33-28 8TFH HUSK	WILLIAMS				
1752	33-28 8TFH HUSK	WILLIAMS				
1753	34-35H KAY ARNS	WILLIAMS				
1754	34X-13 BJARNE	WILLIAMS				
1755	34X-34C ROSE FE	WILLIAMS				
1756	3-5H COLUMBIA	WILLIAMS				
1757	3TFH JAKE 2-11	WILLIAMS				
1758	4-10H SACRAMENT	WILLIAMS				
1759	41X-21 CROWDER	WILLIAMS				
1760	41X-21 DEANGELI	WILLIAMS				
1761	4H JAKE 2-11 (M	WILLIAMS				
1762	5-10-11-1H P TH	WILLIAMS				
1763	5-10-11-1H P TH	WILLIAMS				
1764	5-10H SACRAMENT	WILLIAMS				
1765	6-10H SACRAMENT	WILLIAMS				
1766	6-21H1 PIERRE F	WILLIAMS				
1767	6-5H COLUMBIA F	WILLIAMS				
1768	7-10H1 SACRAMEN	WILLIAMS				
1769	7-21H PIERRE FE	WILLIAMS				
1770	7-5H COLUMBIA F	WILLIAMS				

Appendix B. Reasonably Foreseeable Development for this EA and Gas Capture Projections by Year

The Reasonably Foreseeable Development (RFD) scenario for this EA is based on information and assumptions contained in the RFD developed in 2009, revised in 2011 for the NDFO Resource Management Plan (RMP), and revised again in 2014 for the NDFO RMP to consider the increased rate of development in the Williston Basin portion of North Dakota. The 2014 RFD revision contains projections of oil and gas wells for the western portion of the NDFO area.

The 2014 RFD revision took into consideration the assumptions and methodology from the previous reports completed. It also incorporated current changes in development that resulted in an increase projection of oil and gas development for the next 20 years. For the RFD of this EA, only the first 5 years of projected development was used to complete this analysis. In the next 5 years, the 2014 RFD revision projects a baseline total of 6,648 wells to be producing wells in the western portion of North Dakota. Of those, 1,263 are Federal, 399 are Indian, and 4,986 are Fee/State administered wells.

Based on 2014 RFD, the BLM assumes a total of 6,648 wells are projected to produce gas and flare an average 121 MCFPD per well for the five year analysis period. The gas capture percentages requirements from NDIC revised Order 24665 were applied to the projected number of wells for each of the next five years to identify quantities of gas projected to be captured and projected to be flared short-term and long-term by year. Projections per year and percentages applied are listed below.

1st Year: 5 percent of the flared gas flow is attributed to the pending SN requests which would be required to be capture per BLM,
77 percent of the flared gas flow would be flared short-term (1-year gas capture plan, pipeline pressure)
18 percent of the flared gas flow would be flared long-term (ROW, poor gas quality, etc)

2nd Year: 3 percent of the flared gas flow is attributed to the pending SN requests which would be required to capture per BLM,
80 percent of the flared gas flow would be flared short-term (1-year gas capture plan, pipeline pressure)
17 percent of the flared gas flow would be flared long-term (ROW, poor gas quality, etc)

3rd-4th Year: 3 percent of the flared gas flow is attributed to the pending SN requests which would be required to capture per BLM,
85 percent of the flared gas flow would be flared short-term (1-year gas capture plan, pipeline pressure)
12 percent of the flared gas flow would be flared long-term (ROW, poor gas quality, etc)

5th Year: 3 percent of the flared gas flow is attributed to the pending SN requests which would be required to capture per BLM,
88 percent of the flared gas flow would be flared short-term (1-year gas capture plan, pipeline pressure)
9 percent of the flared gas flow would be flared long-term (ROW, poor gas quality, etc)

6th Year: 3 percent of the flared gas flow is attributed to the pending SN requests which would be required to capture per BLM,
88 percent of the flared gas flow would be flared short-term (1-year gas capture plan, pipeline pressure)
9 percent of the flared gas flow would be flared long-term (ROW, poor gas quality, etc)

For this analysis, short-term is defined as flaring up to 1 year, long-term is defined as greater than 1 year up to 5 years. For the 12,383 existing wells it was assumed that 80% of the produced gas is captured and 20% is flared based on data obtained from NDIC. For new wells that produce gas in years 1 through year 6, NDIC Order 24665 capture rates were assumed. This order requires that by January 1, 2015, the gas capture rate should be at 77 percent which means that 23 percent would be flared; and by November 1, 2020, the gas capture rate should be at least 91 percent which means that 9 percent would be flared. The flaring request inventory generated by BLM in 2014 was used to develop the initial assumption of 80% of flared gas flaring short term, 15% of flared gas being flared long term, and an additional 5% required to be captured by BLM in year 1. The NDIC's gas capture requirements and an assumption of an additional 3% required to be captured by BLM was assumed for years 2-6. Although BLM determines this additional requirement on a case-by-case basis, the 5% and 3% assumptions are conservative. Therefore, the short-term flaring percentages would rise over the years based upon additional infrastructure, which in turn would reduce those wells that need long-term flaring.

Based on February 2015 information maintained by NDIC (May 2015 Director's Cut), total gas production was 1,475,395 MCF/day (or 1.47 BCF/day). Total producing wells in Feb 2015 was 12,199 and the gas capture rate was at 80 percent. Therefore, it can be assumed that 20 percent of the gas is flared and then apply this percentage to all of the producing wells in the analysis area.

1,475,395 MCF per day/12,199 wells = 121 MCF per well per day

The 121 Mcf per day would be an average over the life of the well. Wells in the Williston Basin will produce most of their gas in the first few years of production, and then will steadily produce low volumes of gas for the remaining life of the well.

For the EA, there are 1,770 SN requests for 1,306 wells that have flared gas and are connected to pipeline (i.e. pipeline capacity/pressure issues). There are multiple SN requests for the same well, thus unequal number of requests and wells.

There are 238 SN requests for 173 wells currently flaring gas and not connected to a pipeline.

Therefore, assumptions discussed above (80% flared short term, 15% flared long term, and 5% additional capture by BLM) would be applied to estimate the number of wells to flare short-term, flare long-term, and those required to capture. For the SN requests for wells currently flaring, short-term would not consider pipeline capacity/pressure requests. They are being considered as part of the 1,770 SN requests for wells that flared gas. Again, there are multiple SN requests for the same well, resulting in an unequal number of requests and number of wells.

The flow rates of flared gas developed using BLM's RFD, SN requests, and NDIC requirements were used to estimate air pollutant emissions and impacts to air quality. The calculated flow rates for year 1 through 6 are shown in Table B-1.

Table B-1. EA Reasonable Foreseeable Development and specific yearly percentages, gas capture, and gas flared estimates.

# of Wells currently flaring with Pending SNs (not connected to a pipeline)			**Calculated Average MCFPD per well**	**Total MCFPD**	**MCFPD Captured**	**MCFPD being Flared**	**MCFPD w/ required BLM capture (5%)**	**MCFPD expected to flare short-term (1yr plan, eventually capture gas within 1 yr) (80%)**	**MCFPD expected to flare long-term (poor quality, no ROW, low quantity, etc.) (15%)**
173			121	20,933	0	20,933	1,047	16,746	3,140
							# of EA wells required to capture (5%)	**# of EA wells expected to flare short term (1yr plan to capture gas within 1 yr) (80%)**	**# of wells expected to flare long term (poor quality, no ROW, low quantity, etc.) (15%)**
							9	138	26
NDFO RFD Projected Wells to Produce Gas	**Year (% capture required)**	**NDIC Capture Requirement %**	**Calculated Average MCFPD per well**	**Total MCFPD**	**MCFPD Captured**	**MCFPD Flared**	**MCFPD w/required BLM capture (5%, 3%)**	**MCFPD flaring short-term (1yr plan to capture gas within 1 yr and pipeline capacity/pressure)**	**MCFPD flaring long-term (poor quality, no ROW, low quantity, etc.)**

								(80%,77%, 80%, 85%, 88%)	**(15%, 18%,17%, 12%, 9%)**
1,294	2015 (77%)	77	121	156,590	120,574	36,016	1,801	27,732	6,483
1,237	2016 (80%)	80	121	149,652	119,721	29,930	898	23,944	5,088
1,097	2017 (85%)	85	121	132,733	112,823	19,910	597	16,924	2,389
1,083	2018 (85%)	85	121	130,993	111,344	19,649	589	16,702	2,358
1,022	2019 (88%)	88	121	123,679	108,837	14,841	445	13,060	1,336
915	2020 (88%)	88	121	110,716	97,430	13,286	399	11,692	1,196
6,648									
Existing # of Wells producing gas	**Year**	**Estimated current capture rate**	**Calculated Average MCFPD per well**	**Total MCFPD**	**MCFPD Captured**	**MCFPD Flared**	**MCFPD w/required BLM capture (5%)**	**MCFPD flaring short-term (1yr plan to capture gas dependent on pipeline capacity/pressure) (80%)**	**MCFPD flaring long-term (poor quality, no ROW, low quantity, etc.) (15%)**
12,383	2015	80	121	1,498,343	1,198,674	299,669	14,983	239,735	44,950
Total Cumulative Wells to Produce Gas	**Year**	**Estimated / Required Capture Rate**	**Calculated Average MCFPD per well**	**Total MCFPD**	**MCFPD Captured**	**MCFPD Flared**	**MCFPD w/ required BLM capture (5%, 3%)**	**MCFPD flaring short-term (1yr plan to capture gas within 1 yr and pipeline capacity/pressure) (80%,77%,**	**MCFPD flaring long-term (poor quality, no ROW, low quantity, etc.) (15%,**

								80%, 85%, 88%)	**18%,17%, 12%, 9%)**
13,850	2015	80, 77	121	1,675,866	1,319,248	356,617	17,831	284,213	54,573
15,087	2016	80	121	1,825,517	1,438,970	386,548	18,729	308,158	59,661
16,184	2017	85	121	1,958,251	1,551,793	406,458	19,326	325,081	62,050
17,266	2018	85	121	2,089,244	1,663,138	426,107	19,916	341,783	64,408
18,289	2019	88	121	2,212,923	1,771,975	440,948	20,361	354,843	65,744
19,204	2020	88	121	2,323,639	1,869,405	454,234	20,759	366,535	66,940

Appendix C. Flaring Emissions

Flaring occurs when pipeline infrastructure is not available to capture and transport associated gas to a sales pipeline, pipeline upsets cause temporary flaring, or gas quality is not conducive to sales. North Dakota Department of Health (ND DOH) air quality regulations (NDAC 33-15-07-02) require oil and gas flaring to meet US Environmental Protection Agency (EPA) New Source Performance Standards in 40 CFR 60.18. These regulations impose operational requirements that are equivalent to 98% destruction efficiency for organic compounds.

Heating value of associated gas 1571 Btu/scf WRAP

Heating Value Emission Factors

Pollutant	Emission Factor (lb/MMBtu)	Emission Factor Source	Emission Factor (lb/MMscf)
CO	0.37	WRAP	581.27
NOx	0.068	WRAP	106.828

Emissions	Flaring (uncombusted)		Flaring (combusted)		Total Flaring Emissions (lb/MMscf)	Beneficial Combustion (lb/MMscf)
Pollutant	Emission Factor (lb/MMscf)	Emission Factor Source	Emission Factor (lb/MMscf)	Emission Factor Source		
PM_{10}	Negligible	Gas Analysis (GA)	7.60	AP 42 Section 1.4	7.45	7.60
$PM_{2.5}$	Negligible	GA	7.60	AP 42 Section 1.4	7.45	7.60
NOx	Negligible	GA	106.83	WRAP	104.69	106.83
SO_2	Negligible	GA	115.41	WRAP	113.10	115.41
CO	Negligible	GA	84.00	AP 42 Section 1.4	82.32	84.00
VOC	20136	GA	5.50	AP 42 Section 1.4	408.10	5.50
HAP	812	GA	1.88	AP 42 Section 1.4	18.09	1.88

CO_2	442	GA	120000.00	AP 42 Section 1.4	117608.84	120000.00
CH_4	18203	GA	2.30	AP 42 Section 1.4	366.32	2.30
N_2O	Negligible	GA	2.20	AP 42 Section 1.4	2.16	2.20

MMscf = Million standard cubic feet

Wellhead Gas Analysis (GA)

Gas Component	Mole Fraction	Source	Molecular Weight	Gas Weight	Weight Percent	Weight
	(%)		(lb/lb-mol)	(lb/lb-mol)	(wt%)	(lb/MMscf))
Methane	70.00	WRAP	16.04	11.23	42.87	18203
Carbon Dioxide	0.62	MCFO	43.99	0.27	1.04	442
VOC	23.00	WRAP	54.00	12.42	47.42	20136
HAPs	0.50	ND DOH	100.21	0.50	1.91	812
Other Compounds (primarily ethane)	5.88	---	30.07	1.77	6.75	2867
Totals	**100.00**		**---**	**26.19**	**100.00**	**42460**

Sources:
AP 42: US Environmental Protection Agency, AP 42 Fifth Edition, Volume 1, Section 1.4, Natural Gas Combustion, Supplement D, July 1998. http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf
MCFO: Gas analysis data provided by Charles Laakso, BLM Miles City Field Office, 2010.
ND DOH: North Dakota Department of Health Emission Calculation Workbook, March 2013, http://www.ndhealth.gov/aq/bakken.aspx.
WRAP: Western Regional Air Partnership, Williston Basin 2011 Baseline Emission Inventory, August 2014, http://www.wrapair2.org/ND-SD-MT.aspx.

Proposed Action Estimated Annual Emissions

	Year					
	2015	**2016**	**2017**	**2018**	**2019**	**2020**
Methane Flared (MSCF/day)						
Short-term (no more than 1 year)	27,732	23,944	16,924	16,702	13,060	11,692
Long-term (5 years)	6,483	5,088	2,389	2,358	1,336	1,196
Emissions (short tons/year)						
PM_{10}	47	39	26	26	20	18
$PM_{2.5}$	47	39	26	26	20	18
NOx	654	555	369	364	275	246
SO_2	706	599	399	393	297	266
CO	514	436	290	286	216	194
VOC	2,548	2,162	1,438	1,420	1,072	960
HAP	113	96	64	63	48	43
CO_2	734,378	623,132	414,527	409,096	308,990	276,623
CH_4	2,287	1,941	1,291	1,274	962	862
N_2O	13	11	8	7	6	5
GHG Emissions (metric tons/year)						
CO_2	666,213	565,293	376,050	371,124	280,310	250,947
CH_4	2,075	1,761	1,171	1,156	873	782
N_2O	12	10	7	7	5	5

CO_2e	***721,729***	***612,399***	***407,387***	***402,050***	***303,668***	***271,859***

MSCF = thousand standard cubic feet per day
CO2e emissions are calculated using 100-year global warming potentials (GWPs) of CO2 =1, CH4 = 25, and N2O = 298, as provided in EPA regulations in 40 CFR Part 98, Subpart A, Table A-1. Other GWPs can be used by multiplying the quantity of each gas by its GWP and summing the results.

Emission estimates in this table are based on 12,383 existing wells, 173 pending SNs, and 6,648 new wells (over 5 years).

Cumulative Estimated Emissions

	Year					
	2015	**2016**	**2017**	**2018**	**2019**	**2020**
Methane Flared (MSCF/day)						
Short-term (no more than 1 year)	284,213	308,158	325,081	341,783	354,843	366,535
Long-term (5 years)	54,573	59,661	62,050	64,408	65,744	66,940
Emissions (short tons/year)						
PM_{10}	460	500	526	552	572	589
$PM_{2.5}$	460	500	526	552	572	589
NOx	6,473	7,028	7,397	7,761	8,036	8,282
SO_2	6,993	7,592	7,991	8,384	8,681	8,947
CO	5,090	5,526	5,816	6,102	6,319	6,512
VOC	25,233	27,395	28,833	30,253	31,325	32,285
HAP	1,118	1,214	1,278	1,341	1,388	1,431
CO_2	7,271,580	7,894,725	8,309,230	8,718,327	9,027,317	9,303,940
CH_4	22,649	24,590	25,881	27,155	28,118	28,979

N_2O	133	145	152	160	165	171
GHG Emissions (metric tons/year)						
CO_2	6,596,632	7,161,937	7,537,968	7,909,092	8,189,401	8,440,348
CH_4	20,547	22,307	23,479	24,635	25,508	26,289
N_2O	121	131	138	145	150	155
CO_2e	***7,146,335***	***7,758,747***	***8,166,113***	***8,568,164***	***8,871,832***	***9,143,690***

MSCF = thousand standard cubic feet per day
CO2e emissions are calculated using 100-year global warming potentials (GWPs) of CO2 =1, CH4 = 25, and N2O = 298, as provided in EPA regulations in 40 CFR Part 98, Subpart A, Table A-1. Other GWPs can be used by multiplying the quantity of each gas by its GWP and summing the results.

Emission estimates in this table are based on 12,383 existing wells, 173 pending SNs, and 6,648 new wells (over 5 years).

Criteria Pollutant Emission Comparison for North Dakota

	North Dakota NEI (short tons/year)	**Max. Year Proposed Action Emissions (% of ND Emissions)**	**Max. Year Cumulative Emissions (% of ND Emissions)**	**Source for North Dakota Emissions**
PM_{10}	365,857	0.01%	0.16%	EPA 2011 NEI, Version 2, March 4, 2015, http://www.epa.gov/ttnchie1/net/2011inventory.html
$PM_{2.5}$	90,086	0.05%	0.65%	
NOx	163,788	0.40%	5.06%	
SO_2	1,074,343	0.07%	0.83%	
CO	488,511	0.11%	1.33%	
VOC	281,219	0.91%	11.48%	

NEI = National Emissions Inventory

GHG Emission Comparison

	CO_2e (metric tons/year)	Max. Year Proposed Action Emissions	Max. Year Cumulative Emissions	Source
North Dakota GHG Emissions (2013)	37,003,286	1.95%	24.71%	EPA FLIGHT website, http://ghgdata.epa.gov/ghgp/main.do#/, data current through August 18, 2014.
US Emissions (2014)	6,673,000,000	0.01%	0.14%	U.S. Greenhouse Gas Inventory Report: 1990-2013, EPA, http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html

Appendix D. Viewshed Analysis Method for Historic Properties

According to Section 106 of the National Historic Preservation Act, the introduction of visual elements that diminish the integrity of a historic property's significant historic features are an example of an adverse effect (36 CFR 800.5(2)(v)). Cultural resource specialists can employ various geospatial processing programs to simulate the geographic area that is visible from a historic property's location. The simulated geographic areas are known as viewsheds.

Geospatial processing programs simulate viewsheds by employing the data contained within a digital elevation model and a historic property's Universal Transverse Mercator (UTM) coordinates. The software produces a boolean overlay that indicates geographic areas that are "true" (can be seen) or "false" (can't be seen). The variables typically employed in the analysis are the average height of a person (1.77m) or the average height of a proposed element, such as a flare stack, building, or facility.

Digital elevation models for North Dakota can be obtained from the North Dakota GIS hub found at http://www.nd.gov/gis/. The North Dakota Information Technology Department and the North Dakota GIS Technical Committee operate the GIS Hub.

The purpose of the viewshed analysis is to test two hypotheses:

Hypothesis # 1. The proposed action introduces elements that can be observed from a historic property.

Hypothesis # 2. Existing modern elements have diminished the integrity of a historic property's significant historic features.

If the viewshed analysis does not support Hypothesis # 1 then the proposed action will not introduce a visual element to the historic property.

If the viewshed analysis supports Hypothesis # 1 then the potential to introduce a visual element remains. The specialists will employ Hypothesis # 2 to analyze the historic "setting."

The historic "setting" refers to the "character of the place in which the property played its historical role" (National Register Bulletin 15). When other modern elements exist and have introduced visual elements, then the "setting" may lack the ability to convey the property's historic significance.

The viewsheds will indicate if any modern elements exist. If modern elements exist, the participants in the Section 106 process will employ the viewshed analysis and visual inspections to determine if the proposed action will introduce elements that diminish the integrity of a historic property.

Appendix E. Summary of 30-day Public Comments and BLM Responses.

	NAME, PRVCY REQST, TYPE	COMMENT SUMMARY	CHANGE IN Analysis	RESPONSE/RATIONAL
1	EOG Resources - Heather N. Smith; None; Written	BLM should clarify that not all 2,211 Sundry Notices will be subject to a royalty determination. BLM's continued reference to 2,211 Sundry Notices overlooks the fact that only a very small number of those Sundry Notices are actually pending before the agency for adjudication.	None	Outside the scope if this analysis. Section 1.1 Introduction states "The EA now better describes the proposed action and decision to be made by the BLM, and clarifies that royalty (avoidable/unavoidable loss) determination will be made on a case-by-case basis as a separate decision on each Sundry Notice (SN) request to flare oil-well gas". In addition, Section 1.6 Issues Not Analyzed states, "This EA does not contain discussion of flaring approvals or avoidable/unavoidable loss determinations."
2	EOG Resources - Heather N. Smith; None; Written	Of the 298 Sundry Notices EOG submitted that are included in Appendix A, at least 44 represent notice of EOG's intent to engage in authorized venting or flaring of natural gas consistent with the terms of NTL-4A Section III. Copies of 298 Sundry Notices providing "notice" to BLM in Attachment B.	None	The NEPA process is initiated when a proposal for Federal action exists. The BLM must meet NEPA requirements whenever it is the BLM's decision that would result in an effect on the human environment, even when the effect would be beneficial and regardless of who proposes the action or where it would take place (40 CFR 1508.18). A Sundry Notice request to flare requires a decision to be made by the BLM Authorized Officer; therefore, require NEPA compliance which can be met by completing a CX, EA, or EIS, or a DNA (Section 3.3 in NEPA Handbook H-1790-1). This includes compliance with existing Land Use Plan, laws (e.g. NHPA), regulations, and policies.

3	EOG Resources - Heather N. Smith; None; Written	At least 2 of EOG Sundry Notices have been approved by NDFO, see Attachment C. Previously approved 11/01/2011 and 2/15/2013	Yes	Appendix A was updated to show dates covered by the list of Sundry Notices for this EA. Added, "…*from January 1, 2012 to April 16, 2015 (AFMSS database, accessed April 16, 2015*)" to table heading. The Sundry Notice, provided by EOG Resources in Appendix C of their comment letter, for the Clarks Creek 03-0805H well, approved on 11/1/2011 by NDFO is not the Sundry Notice request to flare being referenced in Appendix A of the EA. The Sundry Notice being referenced in Appendix A of the EA was received by NDFO on 11/11/2014 (EC# 278363). The latter Sundry Notice was returned to EOG on March 29, 2015 requesting additional information for the petroleum engineers to complete their review in accordance to NTL-4A. An avoidable/unavoidable loss determination still needs to be made for this well in accordance to NTL-4A. The Sundry Notice, provided by EOG Resources in Appendix C of their comment letter, for the Hawkeye 102-2501H well, approved on 2/15/2013 by NDFO is not the Sundry Notice request to flare being referenced in Appendix A of the EA. The Sundry Notice being referenced in Appendix A of the EA was received by NDFO on 5/7/2013 (EC# 205802). The latter Sundry Notice is awaiting review in accordance to NTL-4A.All the Sundry Notices listed in Appendix A of the EA require review by NDFO in accordance with NTL-4A. This review will be completed on a case-by-case basis as stated in the EA as a separate decision for each Sundry Notice.
4	EOG Resources - Heather N. Smith; None; Written	Vast majority of the Sundry Notices EOG submitted are simply annual updates to ongoing requests to flare gas when safety conditions or temporary capacity limitations require; these updates do not represent a distinct request to flare and do not require separate agency decision-making. To the extent that BLM assigns a royalty obligation or mitigating conditions to venting or flaring associated with these Sundry Notices, that imposition has no basis in law.	None	Same as #1 and #2.

5	EOG Resources - Heather N. Smith; None; Written	Before proceeding with any royalty determinations, BLM should identify the specific Sundry Notices on which BLM intends to make royalty determinations. BLM should disclose the data BLM will use when making royalty determinations under NTL-4A Section IV for previously filed Sundry Notices.	None	Same as #1
6	EOG Resources - Heather N. Smith; None; Written	EOG believes that BLM has overestimated the administrative benefit adopting Alternative B will have. BLM's overestimates the burden that previously filed Sundry Notices present. There are not 2,211 decisions to be made. Based on EOG's review of Sundry Notices that EOG submitted, EOG believes that the actual number of Sundry Notices that need to be reviewed and acted upon may be less than one-sixth of that amount.	None	Same as #1 and #2, and text below. When a Decision Record is signed and implemented, the NDFO will be able to complete DNAs, as necessary, for decisions made with pending and future SNs with similar actions as those analyzed in this EA. Alternative B allows the NDFO to disclose the reasonably foreseeable impacts from flaring oil-well gas in the western portion of North Dakota, and identify potential mitigation measures for future flaring on new facilities (Section 2.2) in one document and not continually disclosing the latter impacts in individual EAs for each SN.
7	EOG Resources - Heather N. Smith; None; Written	EOG is concerned with BLM's representation that the No Action alternative would prevent BLM from considering the "environmental conditions of a larger area in the western portion of North Dakota" when evaluating an individual Sundry Notice. BLM has not explained this statement and there is no evidence so support this representation. Nothing stops BLM from considering broader environmental impacts when processing an individual request to flare. BLM in fact, regularly performs this exact analysis when processing APDs, requests to flare, and other authorizations that require environmental review as a condition of approval.	None	Alternative B allows the NDFO to disclose the reasonably foreseeable impacts from flaring oil-well gas in the western portion of North Dakota, and identify potential mitigation measures for future flaring on new facilities (Section 2.2) in one document and not continually disclosing the latter impacts in individual EAs for each SN.

8	EOG Resources - Heather N. Smith; None; Written	BLM should clarify that this list is illustrative, not exhaustive, and that operators retain the operational flexibility they currently possess under Order 24665 to propose alternative methods that might be equally (or more) effective on a project-specific basis.	None	Section 2.2 Alternative B states, "Below is a list of potential mitigation measures that BLM could apply, as appropriate, to future flaring requests on new facilities. For past flaring refer to Chapter 4 for the disclosure of the impacts to cultural resources." Section 4.4.3.2 states, "The BLM has the authority to protect the viewsheds of cultural and historic properties for federally administered wells on both federal and non-federal surface under the NHPA and 36 CFR 800 – Protection of Historic Properties. In addition, mitigation requirements for venting and flaring within the viewsheds of historic or cultural properties are authorized under the NEPA, section 6.8.4.The pending 1,770 SN requests on existing locations would not require the application or implementation of design features/mitigation measures. Application and implementation of the project design features/mitigation measures would be applied to future flaring requests on new facilities, or future APDs, with the potential to introduce visual, atmospheric or audible elements diminishing the integrity of a property's setting or feel in accordance with Section 106. Project design features/mitigation measures would provide the necessary measures to reduce, avoid, or minimize potential impacts to cultural or historic properties. Site specific mitigation measures, including design features proposed by the operator would be developed during review of the application to reduce, avoid, or minimize potential impacts to historic or cultural property's setting or feel in accordance with Section 106. For future APDs, application of standard lease terms, stipulations, and cultural lease notices on the APD would provide additional mechanisms to protect cultural or historic properties that may be affected by flaring. The NDFO would conduct necessary viewshed analysis, as outlined in Appendix D, to identify potential impacts to a historic property's setting or feel and where viewshed is integral to the sites integrity and therefore its eligibility to the NRHP. Site specific mitigation measures could include but are not limited to the project design features/mitigation measures addressed in the proposed action to reduce, avoid, or minimize potential impacts to a historic property's setting or feel in accordance with Section 106."

9	EOG Resources - Heather N. Smith; None; Written	BLM has not included any analysis in the EA regarding the costs the listed mitigation measure would impose on well development. For each well on which EOG is required to capture gas, EOG estimates that implementing the gas-capture methods the EA enumerates will impose incremental costs, on average, in a range of approximately $10K to $50K beyond what EOG presently spends to ensure compliance with Order 24665 and other applicable operational regulations.	None	Section 4.4.5.1 states, "Application of mitigation measures to future APDs could result in cost increase to the operator. Mitigation would be determined during the APD review and associated NEPA document, and would depend on factors such as proposed facilities, topography, proximity to historic properties, etc."
10	EOG Resources - Heather N. Smith; None; Written	Some of the gas-capture and mitigation measures listed in the EA have the potential to compromise the integrity of both well infrastructure and the resource reservoir EOG seeks to develop. To the extent that the resource reservoir is damaged or compromised, EOG's ability to maximize recovery and minimize waste will be permanently injured.	None	Same as #8
11	EOG Resources - Heather N. Smith; None; Written	To ensure that BLM meets its legal obligations, the agency must clarify that the operators retain the flexibility to use mitigation techniques beyond those enumerated in the EA, when appropriate, to ensure that mitigation is conducted in the most environmentally sensitive and cost effective method.	None	Same as #8
12	North Dakota Petroleum Council - Kari Cutting; None; Written	BLM should exercise its explicit authority under NTL-4A to ratify or accept North Dakota's gas capture rules.	None	The Montana/Dakotas State Office has chosen not to ratify the State's gas capture rules to ensure BLM meets its fiduciary Trust responsibilities and as stated in Section 1.1 [t]he BLM is currently developing a national rule that will update NTL-4A. The new rule will focus on waste prevention and royalty collection..."

13	North Dakota Petroleum Council - Kari Cutting; None; Written	NDPC disagrees the EA's implicit claim that the filing of a Sundry Notice is an "undertaking" sufficient to trigger the provisions of the National Historic Preservation Act, and believes that federal law requires BLM to impose any necessary mitigation requirements during the Application for Permit to Drill (APD) approval process, not after.	None	Same as #2
14	North Dakota Petroleum Council - Kari Cutting; None; Written	NDPC seeks clarification as to how the various conditions of approval contemplated in the EA will be applied when fee and federal wells are drilled in the same NDIC spacing unit and produce to the same facilities. NDPC is concerned that this proposed EA will lead to improper attempts to exercise jurisdiction where there was none before.	Yes	Section 1.1 Introduction states, " This EA does not apply to private and state wells approved and administered by the State of North Dakota that have been committed to Federal units or communitization agreements in accordance with Instruction memorandum No MT-95-025. The BLM has authority to make avoidable or unavoidable loss determinations for private and state wells committed to Federal units or CAs." ." After further review of Appendix A, the NDFO removed 441 SNs from private and state wells approved and administered by the State of North Dakota that are within a federal communitization agreement. These SNs were erroneously captured from the AFMSS database query for the initial EA review. As stated in Section 1.1, the private and state well committed to federal units or CAs SNs are not subject to this EA review; however, NTL-4A reviews will be completed as a separate review and decision at a later date by the NDFO. The EA was updated to show 1770 SNs, from Federal and Indian wells administered by the BLM, as being reviewed in this EA. The change in the number of SNs being reviewed did not result in changes in Chapter 4 analysis for any of the resources except for Air Resource (see Section 4.4.1 Air Resources and Appendices B and C for specific changes).
15	North Dakota Petroleum Council - Kari Cutting; None; Written	Appendix B to the EA makes a reference to requirements for "metering to the flare" and NDPC believes that this should be modified to allow for the use of gas-oil ratio calculations to measure flared gas.	Yes	Deleted Appendix B from EA. Site specific COAs may be applied on a case by case basis by the petroleum engineer during review of each Sundry Notice in accordance with NTL-4A.

16	North Dakota Petroleum Council - Kari Cutting; None; Written	The BLM should clarify how the proposed decision will affect the operation of spacing units that contain federal and fee wells subject to the same communitization agreement.	None	Same as #8 and #14.
17	North Dakota Petroleum Council - Kari Cutting; None; Written	The EA appears to assert that BLM has authority under NHPA to impose requirements both at the APD approval stage and when an operator submits a Sundry Notice on flaring. This is incorrect, for two reasons. First, mitigation measures imposed under NHPA review triggered by the sale of a lease must be imposed during the APD approval process, not after. Second, the filing of a Sundry Notice is not an "undertaking" that would trigger a new NHPA review. Sundry Notice approvals previously received by NDPC members from the field office have noted that "[i]f flaring continues past [approval date], approval may be needed or royalties may be due," language that clearly concedes that flaring can and does occur without BLM "approval." BLM has no authority to impose new NHPA mitigation requirements when approving a Sundry Notice for flaring, and the EA should be revised to reflect this.	None	Same as #2.

18	North Dakota Petroleum Council - Kari Cutting; None; Written	The BLM has not adequately examined the technical feasibility or compliance costs associated with the potential mitigation measures listed in the EA.The Acting State Director has specifically ordered the field office to consider economic factors when considering mediation alternatives.	None	Same as #9.
19	North Dakota Petroleum Council - Kari Cutting; None; Written	NDPC urges BLM to consider the harm that well shut-ins can cause to the Bakken and Three Forks reservoirs, and the mutual duty of BLM and operators to ensure "the maximum recovery of oil and gas with minimum waste," before ordering any well to be shut-in.	None	Same as #1.
20	North Dakota Petroleum Council - Kari Cutting; None; Written	As federal courts have previously noted, NHPA review does not imposes substantive requirements on an agency's action: rather, NHPA "is a procedural statute" that primarily requires the identification of historic properties within a project area and consultation with relevant parties. Project cost remains an appropriate factor for an agency to consider when performing a NHPA review.	None	Same as #2.
21	North Dakota Petroleum Council - Kari Cutting; None; Written	NDPC is concerned about any remote gas capture requirements that the field office may seek to impose in the future. As the documents submitted by NDPC in the prior appeal indicate, ND operators that have examined the economics of remote gas capture have repeatedly concluded that "the technologies are not economically viable given their substantial cost in comparison to the nominal value of gas being flared."	None	Same as #1.

22	North Dakota Petroleum Council - Kari Cutting; None; Written	There are specific technical issues associated with several of the potential mitigation measures, such as the camouflaging requirements. Vegetation camouflaging could pose a fire and safety danger. Architectural camouflaging could, depending on the well location and requirements, degrade viewshed. Restricting flaring at night will not be feasible, given that flaring associated with maintenance and upset conditions are generally out of the control of the operator and occur any time of the day.	None	Same as #8.
23	North Dakota Petroleum Council - Kari Cutting; None; Written	NDPC has concerns with the metering requirement in the Standard Conditions of Approval for flaring requests, Appendix B. Requirements to meter flared gas do not recognize the technical limitations of meters to measure gas streams that vary substantially in pressure and volume. Current metering methodologies cannot reliably measure highly variable gas pressures and volumes tat are typical of flare stream during upset or emergency conditions, or when production into a gathering line is interrupted. Under the currently controlling BLM rule, OO#5, orifice meters are the default method for gas measurement. BLM regulations to not require that gas be measured exclusively by metering. OO#5 explicitly notes that other acceptable measurement methods acceptable to the AO.	Yes	Same as #15.

24	North Dakota Petroleum Council - Kari Cutting; None; Written	BLM has failed to provide any reasoning that addresses why the historically acceptable GOR calculation is inadequate. NTL-4A allows for GOR. NDPC believes a refusal by BLM to allow operators to GOR calculations would be arbitrary and capricious, because BLM has not provided any supporting evidence as to why a GOR calculation is inadequate to meet the purpose of NTL-4A.	Yes	Same as #15.
25	SM Energy - Pas Laborda; None, Written	Are the requirements to the Notice to Operator dated March 29, 2015 still in effect in light of the new EA?	None	Same as #1.
26	SM Energy - Pas Laborda; None, Written	Many of the numbers associated with number of wells, CAs, etc. are based on June 2015 statistics. These numbers should be updated to show actual impacts as close to the date the EA, FONSI, and ROD are signed.	None	Well numbers listed in Table 3.7.1 in Section 3.7 Fluid Minerals of the EA are an approximate number of wells used to describe the existing environment/development in the analysis area. Updating the existing well numbers would result in negligible changes to each well value, and would not result in changes to impact analysis or proposed mitigation measures identified in the EA.
27	SM Energy - Pas Laborda; None, Written	Will there be any additional guidance or examples provided on the sundry notice and how you want the Evaluation Report and Action Plan formatted (template)? Doing so will also help streamline the preparation, review, and approval of these sundry notices.	None	Same as #1.

28	SM Energy - Pas Laborda; None, Written	EA Page 72 of 81 -- Appendix B – Standard Conditions of Approval for Flaring RequestsWith all the confusion that is caused between Industry, BLM, and ONRR regarding the proper “codes” to use for reporting when gas is being flared and determined to be either unavoidably/avoidably lost and whether or not royalties would be due, it is recommended that the COAs specify the “code” and how these are to be reported under the 2014 for Royalty Purposes and the OGORs for Production Reporting.In regards to metering of flared gas where royalty is due, it should also be specified what type of meters would be allowed. Quite frankly, we look at what we produce and then sell, and the difference would be the volume being flared and any use of the gas for beneficial use are accounted.	Yes	Same as #15.